DOCTORAL THESIS

The Interplay between Risk and Protective Factors in the Prediction of Self-Harm or Suicidal Behaviour within a Prison Environment

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Award date:
2011

Awarding institution:
University of Roehampton

The Interplay between Risk and Protective Factors in the Prediction of Self-Harm or Suicidal Behaviour within a Prison Environment

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A thesis submitted in partial fulfilment of the requirements for the degree

of

PsychD Forensic Psychology

School of Human and Life Sciences

Roehampton University

2011

ABSTRACT

Self-harm and suicide is more prevalent within the prison environment than in community samples, with those in the first weeks of imprisonment at greatest risk. Descriptions and evaluations of static risk factors (e.g. mental health diagnosis) dominate the empirical literature with few dynamic (e.g. defeat) and protective factors (e.g. resilience) evaluated. Additionally, current research is largely atheoretical and the integration of existing knowledge into a unifying model may improve the predictability of assessment. In the current research Williams and Pollock's cry of pain model provided the template for assessing predictors of self-harm or suicide.

For three months, all new arrivals at a local prison were invited to complete baseline questionnaires to assess factors derived from the cry of pain model. It was hypothesised that the factors derived from the model (perceived stress, defeat, entrapment and absence of rescue factors) would be predictive of self-harm and suicide risk and would distinguish prior self-harmers from non self-harmers. Two hundred and seventy prisoners participated in the study. Prisoners with active psychosis and non-English speakers were excluded. All participants were followed up for four months for instances of self-harm. Eighteen participants engaged in self-harm during this period. The hypotheses derived from the model were supported in the prediction of future engagement in self-harm in prison and had some support in identifying those who engaged in previous self-harm and those at risk of suicide. Additional research is needed to confirm the factor structure of defeat and entrapment and the presence of 'scripts' as relevant factors in the cry of pain model. The

implications for practice are discussed including the identification of patterns of risk linked with self-harm and suicide. The measures utilised in the study were shown to be largely valid within this population. Methodological limitations are discussed together with their implications for future research.

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ACKNOWLEDGEMENTS

I would firstly like to sincerely thank the staff at Roehampton University and in particular, my supervisors, Professor Edelmann, Dr Bray and Dr Worrell, for their guidance, feedback and support from the beginning to the very end of this study; the learning has been steep but so rewarding. I also extend my grateful thanks to the previous, and current, Governors at the prison, the staff on the wing and, importantly, the psychology staff and volunteers who supported the study and helped make it happen. There are too many people to mention who assisted me through proofreading, feedback and motivational support during the study and write-up – but you know who you are and I thank you all so much. Finally, I would like to acknowledge the residents of HM Prison Service whose assistance and willingness to participate was so critical. I hope the results can help those who find themselves in prison.

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CHAPTER 1: LITERATURE REVIEW

1.1 INTRODUCTION

1.1.1 Overview

This chapter reviews current knowledge relating to self-harm and suicidal behaviours in both the general population and the prison population. The extent and impact of suicidal and self-harm behaviour in both general and prison environments will be addressed together with definitional issues. Current knowledge of risk and protective factors is reviewed while limitations of research findings are discussed.

1.1.2 The impact of suicide and self-harm in prison

There is an undoubted need for a comprehensive exploration of the area of suicide and self-harm within a correctional setting given that suicide is often the single most common cause of death in correctional settings (World Health Organisation (WHO), 2007). HM Prison Service records that, in 2007, there were 186 deaths in custody, with 92 self-inflicted deaths, 92 deaths from natural causes and 2 homicides (National Offender Management System (NOMS) Safer Custody News, 2008). Any reduction in the levels of self-harm and suicide within prisons would bring substantial benefits to the current emotional and resource demands on healthcare staff, prison staff and managers as well as relevant bodies investigating and supporting these incidents. Furthermore, HM Prison Service has a duty of care to the prisoners held within their facilities; meeting this duty requires a good understanding of those at risk, the needs they have and effective interventions that can be applied to reduce the risk. This duty

brings with it a responsibility to protect the health and safety of the prison population at large. A failure to do so can result in legal challenge along with long-term effects on the family and friends of prisoners as well as for the staff and prisoners who witness or are required to manage these events.

1.1.3 Suicide and self-harm definition

A variety of terms have been used in relation to actions which bring physical harm to an individual resulting in suicide or self-harm. These range from indirect actions such as lack of exercise to the most direct action of self-inflicted suicide (Dear, 2006; Favazza, 1996). Some of the terms used over the last two decades to describe actions which fall short of the actual death of an individual have included 'parasuicide'; 'suicide attempt', 'attempted suicide'; 'deliberate self-harm', 'self-injury', 'non-fatal self-harm', 'non-suicidal self-injury' or 'suicidal behaviour' (Conaghan & Davison, 2002; Dear, 2006; Gratz, 2006; Mangnall & Yurkovich, 2008). There have been many arguments detailed in the literature regarding acceptable terms; however, the WHO report: Preventing Suicide in Jails and Prisons (2007) states that the most accepted term for auto-destructive acts is 'self-harm'. Dear (2006) defines self-harm as 'any deliberately enacted behaviour that is intended to physically harm oneself, no matter how slight the intended injury. There are six categories of self-harm. Self-harm is first categorised according to whether there is or is not any degree of suicidal intent; these categories are further divided into three categories: without resultant injury, with non-fatal injury and with fatal injury.' (p. viii)

It is largely accepted that one should exclude the following from these definitions: 1. Phenomena that are explicit symptoms or classificatory criteria of other disorders, such as eating disorders or substance abuse; 2. Everyday behaviours such as unhealthy eating habits; 3. Psychological self-harm such as deliberately engaging in an abusive partnership (Dear, 2006).

In reviewing the literature, the term 'self-harm' will be used to describe all non-fatal acts of injury to the self unless specifically described as being exceptions to that definition. The term 'suicidal behaviour' will describe all acts of self-harm which have not resulted in fatality but which have included intent to die. The term 'suicide' will refer to fatal acts of harm to the self.

1.2 SUICIDE

1.2.1 Levels of suicide

Over many years, suicide and self-harm within a prison population have been reported to be at significantly higher levels than in the general community. For example, in 2007, the rate of self-inflicted deaths (for both males and females) in HM Prison service was reported as 114 per 100,000 of population (NOMS, 2008); this compares with 9.21 per 100,000 within the general population (National Confidential Enquiry into Suicide and Homicide by People with Mental Illness, 2010). The rate of self-inflicted deaths is also greater than for mental health service users as in 2007 the rate was reported as

94.4 per 100,000 (National Confidential Enquiry into Suicide and Homicide by People with Mental Illness, 2010).

Breaking down the figures further, Jenkins, *et al*., (2005) report that pre-trial detainees have a suicide attempt rate of about 7.5 times the male community rate; sentenced prisoners have a comparative rate of around 6 times that within the general male population. In addition, offenders are more likely than other people to self-harm and commit suicide once they are outside prison (Sarchiapone, *et al*., 2009; Snow, Paton, Oram, & Teers, 2002). This could be taken as indicating that offenders 'import' risk into the prison environment and remain at higher risk after release. However, it has been highlighted that imprisonment itself is a stressful event which may therefore place vulnerable people at greater risk. This is supported by the finding that just under half of all self-inflicted deaths occur within a month of the prisoner arriving at that establishment, with a third occurring in the first seven days (Paton & Borrill, 2004). This early stage of custody is a crucial time for investigation but there is, as yet, a notable paucity of data available relating to the early stages of custody except for demographic, medical and some historical information. This population may thus be considered as providing a unique opportunity for research relating to the stressful impact of imprisonment. However, many of the studies which have been conducted are retrospective or consider prisoners at a later stage of custody when adjustment is already underway and the point at which suicide risk is at its greatest has passed.

Rates of self-inflicted death vary according to the type of prison and its characteristics. A disproportionate number of self-inflicted deaths happen in adult male 'local' prisons (Shaw, Baker, Hunt, Moloney, & Appleby, 2004) with reported rates of 65% of self-inflicted deaths occurring in 'local' prisons (Towl & Crighton 1998). Local prisons serve the local courts, taking prisoners direct from court (by extension they are taken directly from the community) and generally hold prisoners on remand awaiting their court appearance. This is in contrast to most prisons which hold sentenced prisoners. These local prisons have a very high turnover of prisoners and are disproportionately affected by the rising prison population. Dooley (1990) reported that 47.1% of prisoners who commit suicide occur when the prisoner was on remand at the time of their death. This is compared with a remand population of only 11% of the total prisoner population in England and Wales.

Studies have repeatedly identified the critical time for this risk as being the first few days and weeks of imprisonment. Topp (1979) identified 60% of self-inflicted deaths within the first month, and Crighton and Towl (1997) investigating this in more detail found that 10% of suicides occurred within 24 hours, 28% of deaths within 7 days and 45% of deaths within one month.

In summary, the figures indicate that suicide is significantly more likely to occur within a prison environment than within the general community. The risk is also higher than for non-forensic psychiatric patients. Additionally the figures suggest that it is the first

days of custody on remand where risk is at its highest, with prisoners held in local prisons having the highest risk of suicide.

1.2.2 Suicide risk factors in the general community

A number of socio-demographic and clinical factors have been determined as contributing to the risk of suicide within the general community. These are outlined below.

Gender: Suicide is more common in males than females, with men aged 25– 34 being at highest risk (National confidential enquiry into the suicide and homicide of people with mental illness, 1999).

History of self-harm: Approximately half of suicides have a history of self-harm (Foster, Gillespie, & McClelland, 1997) and this proportion increases to two thirds in younger age groups (Appleby, *et al*., 1999). These figures are placed in context by Clark and Fawcett (1992) who report that although a previous suicide attempt is associated with a 5-6 times increase in lifetime risk of completed suicide, 85-90% of suicide attempters do not go on to commit suicide.

Adverse life events: Adverse life events including interpersonal difficulties and legal problems can trigger suicidal behaviour in vulnerable individuals (Cavanagh, Owens, & Johnstone, 1999; Cupina, 2009). Mann, Waternaux, Haas, and Malone (1999) in a study of psychiatric patients, compared suicide attempters to non-suicide attempters identifying the additional areas of childhood abuse, head injuries and a family history of suicide as linked with an increased risk of future suicidal behaviours.

Mental Health diagnosis: One quarter of all suicides were known to be in contact with mental health services in the year before death, with 10– 15% of all suicides occurring in the four weeks after discharge from psychiatric hospital (Hunt, *et al*., 2009). Major depression (as defined by ICD-10) especially with psychotic/melancholic features was a significant predictor of suicide in one of the few prospective studies undertaken with males with a severe depression; 20% of the sample had a high long-term risk for suicide. (Bradvik, Mattisson, Bogren, & Nettelbladt, 2008, 2010).

Substance misuse: Alcoholics and substance users are at high risk of eventual suicide (Berglund, 1984; Weiss & Stephens, 1992).

Personality Disorder: Personality disorder has also been identified as a key risk area (Mann, Waternaux, Haas, & Malone 1999). Duberstein and Conwell (1997) reviewed the area of suicide risk and estimated between 30-40% of suicides are completed by individuals with personality disorder, with the strongest link being with borderline and antisocial personality disorders.

Coping Style: Low levels of problem-focussed coping styles utilised by suicide attempters when compared to non-suicidal controls (Elliott & Frude, 2001).

The following have also been suggested as factors that increase the short-term risk of completed suicide in the suicidal individual (Cassells, Paterson, Dowding, & Morrison, 2005):

- severe psychic anxiety, panic attacks and severe anhedonia (loss of the experience of pleasure)
- worry and agitation

- suicidal ideations
- greater insight into having a mental disorder
- current substance misuse
- medication non-compliance
- high level of stress and dysfunction
- loss of social support

These aspects are not sufficient or exclusive to identification of risk and a caveat to them are those who show clinical improvement, known as the 'smiling depressive', i.e. a sudden calmness after disturbed behaviour, without evidence of a resolution of problems (Morgan & Stanton, 1997). It has been suggested that this is due to a feeling of resolution after a decision to die has been made, ending a period of stressful indecision or ambivalence (Goh, Salmons, & Whittington, 1989).

1.2.3 Suicide in prisons

The identification of those at risk of suicide would clearly enable appropriate intervention and support to be offered. The research from the general community has provided evidence for risk factors for suicide in the community which are also present within the prison community. Research has, however, identified that there is a significantly higher risk of suicide within the early stages of prison (Liebling, 1992; Sattar, 2001; Stuart, 2003) and a range of prison-specific risk factors which require consideration within this population.

The World Health Organisation (WHO) report (2007) summarised the accepted factors for risk of suicide within custody across countries:

- young males (15-49);
- elderly people, especially male;
- indigenous peoples;
- persons with mental illness;
- persons with alcohol and/or substance misuse;
- persons having made a previous suicide attempt;
- Blaauw, Winkel, and Kerkhof (2001) also report that poor social and family support is common among prisoner suicides.

Prior to an act of suicidal behaviour is the presence of suicidal thoughts. The prevalence of suicidal thoughts in prisoners is much greater than identified within the general population. In Jenkins *et al*. (2005) it is reported that 40% of male prisoners had experienced suicidal thoughts in their lifetime, compared to 14% of men living at home. Way, Miraglia, Sawyer, Beer, and Eddy (2005) also reported that 34% of prisoners expressed suicidal ideation while He, Felthous, Holzer, Nathan, and Veasey (2001) reported a much higher figure of 72%. In Jenkins *et al*. (2005) it is reported that of prisoners who had had suicidal thoughts in the last year, 56% had antisocial and one other personality disorder combined, 16% had psychosis, 73% had a neurotic disorder, 49% were dependent on stimulants, opiates or both and 37% had an excessive alcohol usage. At the most extreme, Jenkins *et al.* (2005) claim that 94% of those attempting suicide had three or more psychiatric disorders in their broadest definition. This link

between suicidal thoughts and key suicide risk factors supports the importance of considering suicidal thoughts as a key variable. Although given the very high levels of expressed suicidal ideation by prisoners the task of identifying those who may engage in harming behaviour still requires clarification as few go on to actually commit suicide.

At present there are limitations in the research and current knowledge in the area of suicide prediction as it is not yet known how to accurately track the risk of suicide of an individual, and identify those at highest risk at any particular point in time. The areas of risk are generalised and cover such large numbers of prisoners that they do not aid staff within prison establishments to target limited resources. Many of the characteristics of the suicidal prisoner are shared by the majority of other prisoners. For example, over 65% of prisoners have been shown to have one or more personality disorder and up to 18% are considered to have a major mental illness such as major depression or schizophrenia (Fazel & Danesh, 2002) and yet not all these so identified subsequently demonstrate 'at risk' behaviours pertaining to suicide. Few studies have identified clear characteristics that distinguish prisoners who commit (or attempt) suicide from a large number of others with seemingly similar risk factors that do not. However, research in Austria has identified some additional factors which may have some usefulness as predictors. The research demonstrated that prisoners in single-cell accommodation with a highly violent index offence and who took medication during imprisonment were most likely to perform suicidal behaviours (Fruehwald, Matschnig, Koenig, Bauer, and Frottier, 2004). Of note is that some of these aspects are circular;

for example, if a prisoner is convicted of a highly violent offence they are more likely to be located in a single cell for the safety of other prisoners.

In an Italian study of 1117 prisoners, Sarchiapone, *et al*. (2009) described how 40% of prisoners reported suicidal ideation during their lifetime and 13% had previously attempted suicide. The study indicated that childhood trauma, emotional lability and substance abuse increased the risk of suicidal ideation whilst sensation seeking may potentially decrease it. Suicide ideators and attempters scored higher on scales measuring aggression, hostility, depression, psychoticism and neuroticism and scored lower on extraversion and resilience. Childhood trauma was found to be the strongest predictor of both ideation and attempted suicide. A limitation of this study was that it was retrospective and correlational in design with the groupings based on past behaviour (and measured in the present and not prior or current to experiencing suicidal ideation). The risk factors identified in these prison-based studies show similarities with many of the risk factors for the general community and psychiatric patients, (see section 1.2.2) suggesting that prisoners have a similar process for suicidal behaviours as is the case in the community settings.

1.3 SELF-HARM

1.3.1 Levels of self-harm

Lifetime prevalence rates for self-harm without suicidal intent for adolescents and young adults in the community have been reported as ranging between 10% and 20%

(e.g. Muehlenkamp & Gutierrez, 2007; Ross & Heath, 2002; Whitlock, Eckenrode, & Silverman, 2006). Hawton and Harriss (2008) reported that between 1995 and 2004, the rate of self-harm was, on average, 385.6/100,000; self-harm in this study was defined as harm requiring medical assistance from hospital. Madge, *et al*. (2008) reporting on a Europe-wide study into adolescent self-harm reported that, in England, the self-reported rate of self-harm was 3.2% in the last year. This equates to approximately 3200/100,000 of all levels of self-harm per year.

The NOMS Safer Custody News (2008) reports there are around 23,000 incidents of self-harm per year in HM Prison Service (approximately 50% of these incidents were committed by male prisoners) with approximately 800 individual prisoners performing one or more incidents of self-harm each month (out of around 80,000 prisoners in custody on any day). In 2006-2008 the rolling three year average in male prisons was reported as 15,505 incidents per 100,000 prisoners (Ministry of Justice, 2010) This is between four and forty times the rate reported in community studies.

The critical time for this risk is also the first few days and weeks of imprisonment. Ministry of Justice self-harm statistics (2010) report that for male prisoners in 2008, 8% (888 incidents) of self-harm occurs within the first two days of arrival with the highest level of 22% of incidents (2576 incidents) occuring between one and three months after arrival.

On a practical issue, the reported levels of self-harm are likely to be a significant underestimation of the actual level of self-harm as there are many links in the chain to reporting. It would require the individual to report their injury or for a staff member to identify the need for medical assistance; it would also require staff to accurately report all incidents as self-harm which requires individual prisoners to admit this rather than suggesting an accidental reason for injury. Conversely, prisoners have limited access to self-administered medical care as they would need to request assistance, for instance prisoners would need to ask staff for a plaster, whereas this would be more readily accessible in the community. Those self-harmers in the community able to treat their own injuries would not necessarily come to the attention of medical services or be officially recorded. There will, however, remain a number of people who will not report self-harm within either context and this aspect requires consideration in theory testing and its generalisation to a wider population. This would indicate that the prison figures of self-harm would be more similar to and would be more helpfully compared with that of self-reported self-harm rather than officially recorded self-harm from hospital treatment.

1.3.2 Self-harm risk factors in the general community

Self-harm can be a frequent and concerning event, with many of these self-harm incidents leading to serious harm, including hospital treatment. Many of the risk factors for self-harm in the community are gathered from individuals whose self-harm has resulted in hospital treatment or who are under the care of psychiatric services due to previous serious self-harm. Some are based on figures derived from retrospective

inquiries with college students (Fliege, Lee, Grimm, & Klapp, 2009). A link has been identified between self-harm and suicide with a prospective study of previously self-harming hospitalised patients reporting that the rate of suicide is 15 times higher than the rate for the general population (Hawton, Harriss, & Zahl, 2006). In the same study it was identified that 57.4% of patients followed up had repeated an act of self-harm. The identification of the risk of self-harm and effective treatment may therefore have a significant impact on the risk of later suicide.

A range of risk factors have been suggested in a literature review by Fliege *et al*. (2009) who considered 59 studies for people at risk of self-harm. These risk factors are summarised as follows into the categories, sociodemographic and proximal:

Sociodemographic factors

- younger age;
- unemployment;
- no partnership;
- childhood abuse;
- parental psychological problems;
- previous self-harm;

Proximal factors

- current somatic/health complaints;
- negative affect;
- anxiety;

- depression;
- aggressiveness;
- derealisation/dissociation;
- lack of emotional expressivity;
- low self-esteem;
- self-blame;
- critical life events in last year;
- perceived stress;
- low self-efficacy;
- hopelessness;
- lack of coping skills/maladaptive coping skills, for example, substance use.

Psychiatric disorder is also common amongst self-harming patients, with figures of 92% recorded by Haw, Houston, Townsend, and Hawton (2001) with depression found to be the most common diagnosis (72%). Many self-harm patients also have a personality disorder; Haw *et al*. (2001) recorded that 46% of self-harming patients had such a diagnosis.

Unlike suicide rates, whereby males are more likely to commit suicide than females, men are less likely to engage in self-harm than women (Hawton, Fagg, Simkin & Mills, 1994; Sakinofsky, Roberts, Brown, Cumming & James, 1990). Explanations for this difference between genders focus on at least two areas; Firstly, that men use methods for self-harm which are more likely to be fatal; Secondly, major depression has been

found to be more common in women. For example, Parker, Dawani and Weiss (2008) reported that for a sample of people who report to hospital after an episode of self-harm, only 38.9% of men were also diagnosed (using DSM-IV) criteria with depression compared to 48.9% of women. Any suggestion of a direct link between depression and self-harm has not been fully supported due to the majority of those who self-harmed not being diagnosed with major depression. Continuing the discussions and testing as to reasons for the gender differences can only aid the understanding of the process of self-harm.

1.3.3 Self-harm in prisons

The concept of self-harm within the prison research literature often encompasses a broader range of behaviours than would be identified as self-harm within the community literature. Thus, scratches or minor injury are included in the prison literature while self-harm within a community group tends to be defined on the basis that hospital treatment has been received. This difference may well impact upon the type of risk factors identified within the two populations. There are also potential factors which are relevant only to individuals within a prison environment; for example, offending history which is inevitably only rarely included as a potential risk in community research. Lohner and Konrad (2007) in their review of self-harm behaviour within prisons made a summation of the relevant sociodemographic factors such as unemployment, substance use, psychiatric history or young age which relate to self-harm in the community. They suggest that these factors are so prevalent within the general prison population as to not have significant predictive value on their own and

are only potentially useful in combination with other factors. Other research has also supported a lack of specificity, with the profile of a 'typical' UK prison suicide attempter as someone who tends to be young, white, single and UK-born (Jenkins, *et al*., 2005), a profile describing a significant proportion of prisoners in UK prisons.

However, some investigations have emphasised the unique nature of self-harm during imprisonment (Eyland, Corben, & Barton, 1997; Toch, 1975) with self-harm reflecting a personal breakdown, resulting from a crises of hopelessness, fear, self-doubt or abandonment. Lohner and Konrad (2007) and Meltzer, Jenkins, Singleton, Charlton, and Yar (2003) detail prison and psychological/psychiatric related factors, which in some instances act as risk indicators for self-harm or non-fatal suicidal behaviour:

- being on remand;
- early phase of custody;
- violent crime;
- prior incarceration;
- high number of incidents requiring reporting/disciplinary infractions;
- placement in a stripped cell/isolation;
- bullying;
- any mental disorder;
- prior psychological/psychiatric treatment;
- prior self-harming behaviour;
- prior suicide attempts;
- self-injurious behaviour by others;

- misuse of alcohol;
- misuse of other psychotropic drugs;
- small support group or a severe lack of support.

It has been reported by Meltzer, *et al*. (1999) that self-harm in prisons is more prevalent amongst female prisoners, with 50% of female remand prisoners reporting having self-harmed at some time in their lives. The corresponding figures for men are about half of this. It is reported that as many as 10% of prisoners will self-harm during their term with the likelihood increasing with the length of time in custody. (Meltzer, *et al*., 1999). To provide context for this finding, Maden, Swinton and Gunn (1994) reported that 58% of female prisoners in their study had at least one psychiatric diagnosis, compared to 38% of a counterpart male prisoner population. This raised level of psychiatric diagnosis across the population has been suggested as being part of the reason for higher levels of self-harm amongst this population, and especially women (Themeli, 2006). Self-harm in prison may be more common amongst females, however, the rate amongst male prisoners with a lifetime prevalence rate of between 25-30% remains significantly higher than 10-20% reported for the general community (e.g. Muehlenkamp & Gutierrez, 2007; Ross & Heath, 2002; Whitlock, *et al*., 2006). In addition, and in keeping with community findings, self-harm methods used by men in prison are often related to the more lethal methods such as ligatures. When considering that 92% of self-inflicted deaths in prison occur by ligature (The National Confidential Inquiry into Suicide and Homicide by People with Mental Illness, 2011), the importance in understanding self-harm by men in prison remains pertinent.

1.4 LIMITATIONS OF CURRENT RESEARCH – CHANGING PROFILES

1.4.1 Static and dynamic risk

Profiles of risk focussed on static or long-term factors can be useful both in identifying high-risk groups that may need further assessment and as a guide to appropriate intervention for stabilisation of that aspect of risk (for example, mental health treatment). However, as situations change over time and interventions are completed, the level of risks may also change. At present, the research literature does not clearly outline how current risk can be determined from knowledge of historical factors. Most studies focussing on self-harm in prisons have been concerned with risk factors, prevalence or clinical/medical factors. They have also focussed either on the profile of a 'vulnerable' prisoner and the idea of an 'imported vulnerability' or that imprisonment itself precipitates self-harm and the situational factors have been explored (termed by some as the 'deprivation' model) (e.g. review by Crighton & Towl, 2002; Liebling, 1992; Livingstone, 1997). An area to be further explored is the idea of a mixed model, which includes individual vulnerabilities and how they interact with the environment as a way to aid understanding, identification and management.

Although many risk factors are static in nature (history of a specific behaviour) and would be considered trait factors, it is also important to take account of dynamic or individual factors. This is supported by the work of Fawcett (2001) and Rudd (2003) who point towards the need for instruments to improve by focusing on the acute or proximal risk factors as oppose to the more chronic factors. Berman and Jobes (1991) summarise the key factors in considering the issue.

'Suicidal urges and behaviours are largely temporally and situationally specific. Suicidal intent is not constant within an individual. The urge to act in a self-harmful or destructive manner is state dependant; it waxes, wanes, disappears, and returns. The interaction of factors specific to the individual, the environment, and the situational and temporal context determine, in an idiosyncratic and dynamic manner, the if and when of both the urge to commit suicide and the action to accomplish it. Therefore, any attempt to apply a statistical model through the use of scales, questionnaires, psychological tests, and so forth to the assessment of possible suicidal behaviour must account for these dynamic interactions'. (Berman & Jobes, 1991, p.69)

The reasons for current gaps in knowledge are no doubt due in large part to the retrospective nature of most studies which are often conducted on three types of participant groups. The first group involve those who have self-harmed and reported to hospital. With such a population a serious level of self-harm only has been evaluated. The second group involves college students reporting on previous self-harm. The third set of studies consists of those administering measures of suicidal ideation to a range of participants. None of these studies have evaluations undertaken on the presence of possible predictor variables before an actual behaviour has taken place. Another limitation is highlighted by Fliege *et al*. (2009) who note that to their knowledge there is only one study that has tested interaction effects between different risk factors for the onset of self-harm. The application of singular risk factors is of limited utility as while individual factors may relate to increased risk, each on its own only explains a small percentage of the overall variance. This is illustrated by the

finding that 85% of patients who present to hospital with self-harm were assessed at their last contact with trained practitioners as having a low or no suicidal risk at that time (National Confidential Enquiry Into Suicide And Homicide By People With Mental Illness, 1999).

With reference to prisoners, insight as to the limitations of actuarial assessments can be gleaned by considering the statements of prisoners who have harmed themselves early in custody as reported by Paton and Borrill (2004). One declared that: 'It was my first night in prison, I'd lost everything – my home, my job, my family'; 'I felt upset and depressed at being in prison again… It was as if I'd never left'; 'I was withdrawing. I felt depressed, angry, confused, tired. I wanted to sleep at any cost'; 'The first night was the worst… It kicks you in the head when you first come in' (Paton & Borrill, 2004, p.115) Thus the feelings and thoughts expressed by prisoners during their early days of custody, although showing evidence of the identifiable risk factors (for example, reactive depression) may not indicate the presence of an underlying psychiatric disorder (such as major depression). Within the examples given above, there are a range of thoughts which indicate stress and difficulties in coping with the situation. Carefully conducted research is therefore required to identify the heightened risk which may manifest for some individuals amongst the many who struggle emotionally on entry to prison. Given the lack of research relating to dynamic and emotional aspects of risk it is this area which requires greater exploration to be able to better identify vulnerable prisoners on entry to prison.

An additional problem in identifying risk is that there tends to be limited information available about new prisoners which can make historical risk assessment challenging. This results in heavy reliance on the self-reported statements from new prisoners. The reliance on the statements of an individual regarding whether they are experiencing self-harm or suicidal thoughts is somewhat flawed, as this assumes that an individual has insight into their own patterns of behaviour. A more reliable assessment may be assisted by obtaining a clearer understanding of the combination of feelings, vulnerabilities and presentation of the individual at the point of reception into prison.

1.4.2 Protective Factors

The majority of research exploring self-harm and suicide has been retrospective and correlational in nature, focused on general risk areas; factors protective for the individual have rarely been identified. By considering only individual risk factors, strengths and resilience that assist coping and keep people from suicidal behaviour are neglected. For example, research following up a community sample of patients over 10, 15 and 25 years has shown that only 3.1% to 13.8% of people assessed with medium to severe depression died by suicide (Bradvik *et al*., 2008). Additionally, a 14 year follow-up of patients diagnosed with schizophrenia found that only 8 out of the 150 patients committed suicide (Loas, Azi, Noisette, Legrand & Yon, 2009). Such findings tend to be consistent across countries. Furthermore, a New Zealand study following up participants over 21 years found that the majority of depressed young people did not develop suicidal ideation nor did they attempt suicide. This study also identified factors which might increase resilience and which could serve a protective

function in relation to suicidal behaviour. Such factors included self-esteem, peer affiliations and school achievement (Fergusson, Beautrais, & Horwood, 2003). While there are factors which increase the risk of suicide, the majority of those with these risk factors do not actually commit suicide. This suggests a broader approach to assessment is warranted to determine the interplay of factors that increase the risk together with protective factors which serve to decrease risk. Fliege *et al*. (2009) also report a similar conclusion when considering the risk of self-harm.

In a prison population, the overwhelming majority of prisoners in the first few days of imprisonment demonstrate one or more of the identified suicide risk factors with many exhibiting three or four. However, there are comparatively few suicides and few serious self-harm acts which have the potential to be fatal. This suggests that there are also likely to be factors at play which are protecting these vulnerable individuals and the current knowledge is discussed by Fliege *et al*., (2009).

'The evidence on protective factors against deliberate self-harm is incomplete. While some studies investigated the lack of a resource as a correlate or precursor of deliberate self-harm, buffering or moderating effects were neglected for the most part'. (Fliege et al., 2009, p.490)

Protective factors can be placed into two general groups, external (for example, social support, peer support and family accord) and internal (for example, resilience, positive self-concept, emotional stability, coping strategy). The research relating to the

protective capacity of such factors in relation to suicide attempts and self-harm behaviour is, at present, limited.

The present study seeks to address the current gap in knowledge by considering risk and protective factors in relation to self-harming behaviour with less focus on static factors such as psychiatric diagnosis. Although current knowledge, such as psychiatric diagnosis, does provide a context within which certain individuals can be considered to be at higher or lower risk of self-harming and committing suicidal behaviours, it does not fully provide the answers about dynamic risk. However, this current knowledge is still required to be included within any explanatory model. Any model must not only explain why some of those with psychiatric diagnoses are at higher risk than non-psychiatric patients but also why some individuals without psychiatric illness engage in self-harming and suicidal behaviour.

1.5 SINGLE UNDERLYING PROCESS FOR SELF-HARM AND SUICIDAL BEHAVIOUR

It has been suggested that a distinction between self-harming and suicidal behaviour can be made in relation to intent or outcome (Lohner & Konrad, 2007; Nock & Kessler, 2006). Research which has considered this distinction suggests that self-harmers with the intent to die can be distinguished from those that do not have the intent to die. The research identifies risk from the presence of behaviours such as mania and depression but also includes suggestions such as education level and area of residence

in the USA as distinguishing people who self-harm with intent to die from those without such intent (Nock & Kessler, 2006).

Some researchers have detailed how the use of post-hoc assessments of intent for suicide may lack reliability (Ivanoff, 1992) and that the distinction between 'serious' and 'not serious' suicide attempts is difficult to determine as non-fatal self-harm may include a mixture of motives that may include 'manipulative motives and a high degree of suicidal intent' (Dear, 2006, p.57). Muehlankamp and Gutierrez (2004) argue that self-harm should be considered along the same continuum as suicide, and present as evidence the finding that those who engage in self-harm report suicidal ideation and often have a history of at least one suicide attempt. This is supported by a study on juvenile offenders which found that suicide and self-harm were co-existent amongst the same participants leading the researchers to state their support for the continuum approach (Kenny, Lennings, & Munn, 2008).

It is important to recognise that there are noticeable similarities between self-harm and suicide and the process for some may be the same. For example, the methods used in prison for self-harm or suicidal behaviour are often similar, maybe due to greater limitations on available resources. So, hanging, medication overdoses and cutting are the most often used methods in both suicide and non-fatal self-harm within prisons. (Daniel & Fleming, 2005; DeHart, Smith, & Kaminski, 2009; Power & Spencer, 1987; Shaw *et al*.., 2004; Wilmotte, Cosyns, Mendlewicz, & Deschutter, 1973). With this in

mind, the distinction between an act of self-harm, with or without suicidal intent, can result in the same outcome and have the ability to result in a fatal act. An argument could be made that the process of self-harm and suicide may therefore be similar due to method and potential outcome.

One of the strongest arguments for considering self-harm and suicide within a single process is the consideration of the risk factors for self-harm and suicide. The risk factors identified in section 1.2.2 for suicide and section 1.3.2 for self-harm are strikingly similar, with mental health, psychiatric treatment, previous self-harm or suicidal attempt, adverse life events, ineffective coping strategies and substance misuse being risk factors for both behaviours. This provides strong evidence that a single underlying process of increased vulnerability for both self-harm and suicide is likely, regardless of the intent of the behaviour. The picture is therefore far from clear as to whether prisoners who self-harm with intent to die are significantly different from prisoners who self-harm without such intent.

1.6 CURRENT PRACTICE IN HM PRISON SERVICE

To place the research into context, a brief overview of current policy and practice within HM Prison Service will be outlined. Prison Service Order 2700 (HM Prison Service, 2007) is the key policy document which outlines practice within all prisons. In addition, The National Institute for Health and Clinical Excellence (NICE) have produced guidelines for medical professionals in relation to self-harm. (NICE, 2004). The practice

as outlined in both documents, follow a similar process of identification of risk, treating injury (if required), completing an assessment of risk and managing risk. In practice in HM Prison Service the process firstly involves staff identifying risk and this may be through file information, behavioural concerns or statements from the prisoner which raise concern. If there is concern that self-harm or suicide risk is significant then an Assessment, Care in custody and Teamwork (ACCT) form is opened. The ACCT process is the national procedure for managing self-harm and suicide risk across HM prison service through the use of an orange booklet which guides practice. On opening the form the wing manager will consider immediate requirements to keep the prisoner safe and to manage any medical issues as relevant. Further, within 24 hours a more detailed assessment of risk is undertaken by a trained assessor. A care plan to manage and reduce risk is then developed between relevant staff, including the case manager (usually the wing manager), ACCT assessor and the prisoner. The plan is then undertaken, with regular reviews by the case manager to consider if risk is still high and to ensure that the care plan is completed. When risk is considered to be managed then the ACCT form is closed. A further 'post-closure' review is undertaken within 7 days to assess any issues from ACCT closure. The ACCT procedure is based upon current knowledge of the lists of risk factors with the training focussed on how risk may be identified through these lists. The processes outlined within NHS and HMPS policies and guidance are not currently based upon a theoretical model, nor is clear guidance provided as to how the level of risk should be assessed or how the interlinking of risk is to be considered. Positively, the ACCT process aims to individualise the care provided through the assessment and review process with the individual prisoner being interviewed and present for all reviews. The individualisation of the process allows for

the key concerns and emotional experiences of the individual to be considered and addressed. The ACCT and NHS processes provide the starting point for effective care but there are deficiencies in the guidance which this study aims to address. This includes providing a solid theoretical model to guide judgement, assessment and intervention plus a clearer understanding of how risk may interlink to heighten risk to allow for more targeted resource allocation for those at greatest risk. In addition, within HMPS there is currently a single assessment undertaken at the start of the ACCT process with no further full assessments undertaken.

1.7 CONCLUSION

The prevalence of suicidal and self-harm behaviour in prison has been explored together with risk factors identified for prisoners when compared to those in the community. There is much similarity between community and prison samples in the static and historical risk factors identified. Research indicates, however, that there are limitations to research findings as few dynamic and specific risk or protective factors for prisoners have yet been identified. The time of greatest risk of self-harm and suicidal behaviour is within the first week of imprisonment when levels of suicide and self-harm are at their highest, especially for prisoners held within 'local' prisons. Few studies have explored this in detail and as yet there is no known prison research identifying both the risk and protective factors from a prospective study of the risk of future self-harm leading to a lack of specificity in identifying prisoners at risk. The present study explores this key time of imprisonment evaluating both risk and protective factors and their interaction and identify prisoners at risk of self-harm and suicide.

CHAPTER 2: THEORETICAL PROCESS

2.1 THEORETICAL PROCESS – CRY OF PAIN MODEL

2.1.1 Overview

This chapter explores the utility of the cry of pain model as an explanatory framework of the process underlying self-harm and suicidal behaviours. The chapter will describe the model in relation to suicidal behaviours, how it applies to self-harm behaviour, explore current research evaluating its validity and how it can be tested in relation to self-harm and suicide within a prison population.

2.1.2 The cry of pain model

There has been, on the whole, limited success in predicting suicide (O'Connor & Sheehy, 2000). There are a range of reasons for this. Firstly, in statistical terms, completed suicide is a relatively rare event and is therefore difficult to predict; prospective studies would require very large numbers to capture a very small number of individuals who complete suicide. Attempts at understanding suicidal behaviour have largely been atheoretical in nature (Johnson, Gooding & Tarrier, 2008) and as a result, while potential risk factors are identified, this is in the absence of any clear understanding of underlying rationale or explanatory framework for why certain factors (such as mental health or substance misuse) create a risk in some but not in others (O'Connor, Armitage, & Gray, 2006). Additionally, there has been a focus on a medical model of suicide, defining suicidal behaviour as an illness and illness defining the act. Although there are obvious risk factors relating to mental health issues (e.g.

depression, psychosis), focusing on self-harm as an illness has resulted in insufficient recognition that such a model neither provides a full explanation nor does it provide a sufficiently broad framework to underpin research. In addition, the previous focus of prison research has been largely on either importation or deprivation models of imprisonment (Blauuw et al., 2001; Crighton & Towl, 2002). There has been some consideration of 'mixed models' (Liebling, 1995) although the testing of theoretical models relating to suicide and self-harm which consider both individual vulnerability and how this links with the environment has been limited. This testing may allow for an important development of understanding of the process of suicide and self-harm in prison. The cry of pain model, as a biopsychosocial model, includes biological processes, psychological aspects and social interactions within one model. This model will allow for a bridge between the two previous approaches to self-harm and suicide in prison and aid the development of a more holistic view of imprisonment and self-harm; a direction supported by Her Majesty's Chief Inspector of Prisons (HMCIP, 1999).

Uncovering the process of self-injuring behaviour may offer important insights into the nature and potential prevention of self-harm and suicide. It is only recently that broader theories have been proposed regarding the process underlying suicidal and self-harm behaviour. One approach which has built upon existing theories to bring together a range of behaviours and processes is the cry of pain model. This model suggests that suicidal ideation and behaviour are the end-products of a perception of being trapped in a stressful situation from which there is no escape and no rescue (Williams & Pollock, 2001).

This model draws upon the 'arrested flight' theory which relates to the nature of animal conflicts (MacLean, 1990) where an animal is defeated but cannot escape. It is this state of entrapment, where the *motivation* to take flight is blocked, that leads to 'arrested flight'. This involves the suppression of explorative behaviour (especially approach behaviours), use of submissive/static postures and severe demobilisation. This aspect has some links to the theory of learned helplessness where the animal first makes invigorated attempts to escape but becomes demobilised when these efforts fail (Seligman, 1972). Learned helplessness has shown to being about a substantial decrease in associating action with positive outcome and also leads to a marked reduction in the range of responses undertaken to external demands (Miller, 1988). There have been a number of studies into aspects of the cry of pain model and in particular the role of defeat and entrapment in depression and anxiety. These studies have confirmed that the perception of defeat and entrapment are associated with depression (Gilbert & Allan, 1998; Goldstein & Willner, 2002) and social anxiety (Aderka, Weisman, Shahar, & Gilboa-Schechtman, 2009). Since both depression and anxiety have been identified as risk factors for both suicidal and self-harm behaviour (Fliege *et al*., 2009), the relevance of defeat and entrapment as a link between depression, suicide and self-harm warrants exploration.

Williams and Pollock (2001) propose that suicidal behaviour (whether the outcome is life or death) should be seen as a cry of pain rather than the traditional notion of a 'cry for help'. The difference between these views is the cry of pain is defined as an expression of negative feelings without the intent of asking for help; whereby a cry for

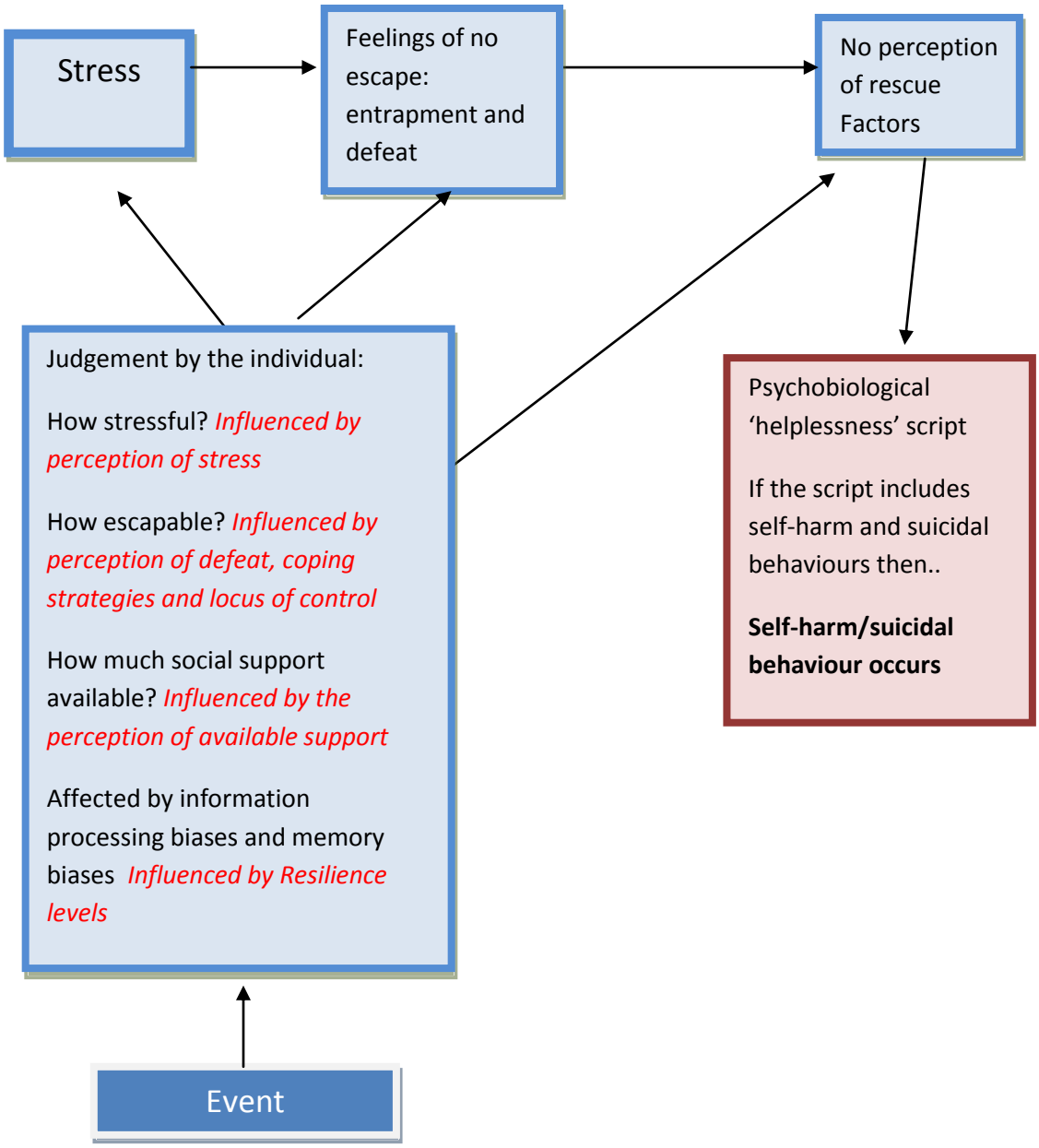
help has assistance or rescue as the motivator for the action. They argue that although some self-harming behaviour may be motivated by a wish to die, a more common theme is a wish to escape from a situation which the person finds unbearable. Escape has been listed by other researchers as a common theme of suicide (Leenaar, 1996; Shneidman, Maris, Silverman, & Canetto, 1997). This theme of escape as a prominent contributor to suicidal behaviour has also been shown to be prominent in non-fatal self-harm (Hjelmeland & Groholt, 2005) and is central within the Experiential-Avoidance Model of self-harm which purports that self-harm functions to help the individual escape from unwanted emotional experiences (Chapman, Gratz, & Brown, 2006). In this way, both self-harm and suicidal behaviour have a common theme, although one may have a more serious intent for the outcome (to die). In keeping with the 'arrested flight' model, Williams and Pollock (2001) propose that self-harming behaviour is a response to a stressful situation and has three main components which act alongside the presence of a stressor to increase the risk of suicidal behaviours. Therefore, in this model, there are four key components that should be present to place an individual at high risk of suicide or self-harm:

1. **The presence of stressors;**
2. **The presence of defeat –** through the appraisal of stressors;
3. **Perception of entrapment –** this may be magnified through information-processing biases, negative memory schema and deficits in problem-solving strategies; leading to an 'arrested flight' reaction resulting in increasingly intractable feelings of entrapment;

4. **A perceived absence of rescue factors** (e.g. presence and perception of available social support resources and their importance) **and feelings of social isolation.**

When all these components are present Williams and Pollock (2001) state that the 'biologically mediated helplessness script' is activated. This activation can be seen as a state of 'learned helplessness' (Seligman, 1972) and results in the individual feeling they have no control over their situation. Whether someone acts on this activation and in what manner, is also determined by such factors as whether there is an available means of suicide or the effects of modelling from other self-harmers. Williams and Pollock (2000, 2001) argue that judgements regarding the perception of defeat, entrapment and rescue are determined, at least in part, by psychological variables. For instance, when attempts are made to deal with a situation and these attempts are perceived as unsuccessful, the individual feels powerless in escaping from that situation. In turn, this can lead to hopelessness as the individual feels the future may hold little hope or opportunity for rescue. In this model, the presence, or most importantly the perception of the presence, of rescue factors can moderate the relationship between entrapment and suicidal behaviours, thereby reducing the risk of self-harm or suicide. A diagram of the cry of pain model is presented at Figure 1.

Figure 1: The Cry of Pain Model (adapted from Williams *et al*. (2001)



2.1.2.1 Cry of pain model links to self-harm

The cry of pain model was initially developed in relation to suicidal behaviour and the process and functions of that behaviour. The links to self-harm are currently less clear although there has been some support for the model's links to self-harm (Rasmussen *et al.*, 2009; Scoliers, *et al*., 2009). Although it is likely that self-harm serves multiple functions which differ from person to person, one of the most consistent findings in studies on the self-reported reasons for self-harm is related to avoiding, eliminating or escaping internal experiences (Chapman, *et al*., 2006). Within a juvenile correctional facility (USA), the most frequently endorsed reason for engaging in self-harm was 'to stop bad feelings' (65%), followed by 'to feel something' (60%) and 'to self-punish' (60%) (Penn, Esposito, Schaeffer, Fritz & Sprirto, 2003). The desire to escape internal states links with the cry of pain model although one might argue that self-harm occurs at an earlier stage in the model, with the desire to escape the feelings rather than the situation as a whole predominating. In keeping with the cry of pain model, the main reasons for self-harm identified above do not specifically include intent for assistance from others as would be expected from a 'cry for help' model. It may therefore be that, for some, the act of self-harm is the expression of negative feelings only and has cross-over with existing knowledge on suicide (see Section 2.1.2).

Repeated self-harm and suicidal behaviours are explained by the cry of pain model by suggesting that the use of maladaptive strategies is developed over the duration of one's lifetime as a result of defeat and entrapment felt in certain situations. Williams, Crane, Barnhofer, Van der Does and Segal, (2006) argue that the pattern of negative

thoughts, bodily sensations, attentional biases and sensitivities which become associated with a particular mood will be activated whenever this mood is felt. If self-harm or suicidal ideation is a part of this pattern, it takes only a change in mood for the pattern of self-harm and suicidal thoughts to be reactivated. In some cases this mood will be experienced in a form severe enough for suicidal behaviour to be expressed, while in others it may take several activations of suicidal ideation before suicidal behaviours occur. This suggestion has been empirically supported by Rasmussen *et al* (2009) who reported higher levels of defeat and lower levels of social support from repeat self-harmers.

2.2 EVIDENCE TO SUPPORT THE CRY OF PAIN MODEL

2.2.1 Presence of stressors/life events

Research into suicide has identified that life events, both distal and proximal, increase the risk of suicide in some individuals. For example, Heikkinen, Aro, and Lannqvist (1994) conducted a psychological autopsy (a retrospective review of available information to consider factors that were present) of over 1000 people who died from suicide in Finland. They concluded that stressful events had occurred in 80% of cases within three months prior to their death. These events were most often difficulties with employment, family discord and somatic illness. These findings have been replicated within other countries in the USA and Europe (Duberstein, Conwell, Conner, Eberly & Caine, 2004; Qin, Agerbo, Westergard-Nielsen, Erikkson & Mortenson, 2000). A number of research studies have found that the presence of negative life events is also related to a range of difficulties including mental health problems and the

presence of personality disorders (Fallon, 2008). A study evaluating the existence of a range of psychological variables in relation to personality disorder reported that high perceived stress explained a large percentage of the variance in personality disorders (PD) (Sinha & Watson, 1997). Substance users have also been found to have more negative life events such as childhood trauma in their histories (Cuomo, Sarchiapone, Giannantonio, Mancini & Roy, 2008). The process by which these life events lead to such problems is not yet fully explored by existing research. However, since mental health, substance use and personality disorders are also linked to suicidal behaviour, a single explanatory process may exist which begins with negative life events and ends with the use of suicidal behaviours.

Recent life events, in particular interpersonal problems (Power, Cooke, & Brooks, 1985) have also been identified as a risk factor for deliberate self-harm. It is also reported that negative life events are related to the intensity of suicidal crises among first-time attempters (Joiner & Rudd, 2000). One or more chronic problems, perceived by the patients as unsolvable, were reported by 66% of 150 patients admitted to hospital following a self-harm incident (Milnes, Owens, & Blenkiron, 2002). However, Power *et al*. (1985) note that life events in themselves do not predict the outcome or seriousness of the self-harm act. This indicates a role for additional moderating or risk factors to play in determining the outcome of self-harm and suicide.

Research has frequently reported over decades that most prisoners have experienced a relatively high degree of trauma as children and young adults (Blaauw, Arensman, Kraaij, Winkel & Bout, 2002), with disproportionate numbers of prisoners having family backgrounds that include divorce, criminality, alcoholism and/or physical, emotional or sexual abuse (Masuda, Cutler, Hein, & Holmes, 1978). Studies have also shown that even within this higher overall level of traumatic events, those considered at greater suicide risk have an increased prevalence of these events (Blaauw *et al*., 2002). While this research may suggest that it is the life events themselves that lead to suicidal and self-harming behaviour, it does not consider the perceived impact of those events on the individual.

Such perceived impact was considered in a study of 120 undergraduates reported by Kuiper, Olinger, and Lyons (1986). They found that increases in the scores on the measure of depression were related to increases in negative life change scores with perceived global level of stress significantly moderating this relationship. For participants low on perceived stress, negative life changes had only a minimal impact on the level on a measure of depression but for participants high on perceived stress, the relationship was more pronounced. In a further study perceived stress was found to be significantly correlated with self-reported negative affect and physical symptoms (Pbert, Doerfler, & DeCosimo, 1992). Importantly, the Perceived Stress Scale and the life events measures were only moderately correlated, indicating that the two scales assessed different features of the stress experience. Perceived stress scores were significantly correlated with affective and physical symptoms even after the variance

associated with life events had been moderated. In other words, depression and potentially self-harm and suicidal behavior are more likely to be related to perceived levels of stress rather than negative life events per se. It is important therefore to assess perceived stress from life events, rather than the existence of specific life events themselves as a potential predictor of self-harm. Having reviewed the evidence confirming the presence of stress as relevant within the model, the next aspect of the model (see Figure 1) to be considered will be the role of the presence of defeat.

2.2.2 Presence of defeat

Defeat is defined by Gilbert and Allan, 1998 as 'a sense of failed struggle and losing rank' (p.589). Studies have shown that defeat is an important aspect in the process of depression (Gilbert & Allan, 1998; Goldstein & Willner, 2002). In research of direct relevance to the current study, O'Connor (2003) reported higher scores of defeat for patients who presented at the accident and emergency department at hospital after self-harm compared to matched hospital controls. Rasmussen, *et al*. (2010) recently completed a similar study with a larger sample, also finding high levels of defeat present in patients who self-harm. Bolton, Gooding, Kapur, *et al*. (2007) suggested in their review of the empirical evidence relating to the cry of pain model, that defeat and entrapment are key aspects in the development of suicidal behaviour in schizophrenic patients. This was supported and expanded upon in the critique of the model by Johnson, Gooding, and Tarrier (2008) and Taylor, Wood, Gooding, Johnson, and Tarrier (2009). These research findings suggests that feelings of defeat are a potential predictor variable in relation to risk of self-harm or suicidal behaviour. The relevance of

defeat has been confirmed through existing research and has been identified alongside entrapment within the process. The role of entrapment in self-harm and suicide as part of the cry of pain model will next be discussed (see Figure 1, page 51).

2.2.3 Perception of entrapment

Entrapment is defined by Gilbert and Allan (1998) as consisting of two aspects: internal entrapment which is the perception of entrapment by one's own thoughts and feelings; and external entrapment which are perceptions of entrapment by external situations.

The link between entrapment and self-harming/suicidal behaviour was directly explored by Rasmussen, *et al*. (2010) who found that both internal and external entrapment was significantly higher for self-harming patients when compared to hospital controls. Regression analysis indicated that the feeling of entrapment (both internal and external) predicted suicidal ideation. Rasmussen, *et al.* (2010) also report that entrapment is a mediator of the defeat and suicidal ideation relationship as the relationship between defeat and suicidal ideation is reduced to non-significance when entrapment is controlled for. This indicates that feelings of entrapment have a critical role in the development of suicidal thoughts and are a necessary element in the process of suicidal ideation. A key aspect of the process of entrapment would be the extent to which a passive or active approach was utilised in relation to problem solving. If there was a perception of entrapment, the predicted response in the model (drawn from the 'arrested flight' model) would be lesser use of approach coping strategies and greater use of avoidant coping strategies. The avoidant strategies may include self-harm. This is supported by the finding of Milnes *et al*. (2002) that 66% of patients

hospitalised after an incident of self-harm report a chronic problem as 'unsolvable' and hence would utilise less active problem-solving strategies.

The perception of entrapment is considered to include more than one aspect and potential aspects are considered in this section as relevant to feelings of entrapment and linked to self-harm and suicidal behaviour. These include hopelessness, the perception of available coping strategies, resilience and locus of control. These are discussed separately below.

2.2.3.1 Hopelessness

The exact terminology of entrapment is discussed in the literature and strong evidence is presented by Johnson, *et al*. (2008) that entrapment has overlapped with hopelessness. For example, both would highlight a failure to predict positive future events and research has provided evidence for such a relationship (Hunter & O'Connor, 2003; Rasmussen, *et al*., 2010). As evidence of close overlap, Van Heeringen, Hawton and Williams (2000) state that the higher the perceived entrapment, the higher the level of hopelessness. It is theoretically possible that hopelessness itself will develop from the perception of blocked escape. Hopelessness may therefore be an aspect of entrapment although the literature is unclear as to how they overlap or whether one leads to the other. One of the strongest links shown is between hopelessness and suicidal behaviour (Beck, Brown, & Steer, 1989; Brown, Beck, Steer, & Grisham, 2000) and if it is assumed that entrapment is directly linked to hopelessness, evidence from

hopelessness research may also then provide support for a link between the perception of entrapment and suicidal behaviour.

2.2.3.2 Coping style

Coping has been defined as 'cognitive and behavioural efforts to manage specific external or internal demands that are appraised as taxing or exceeding the resources of a person' (Lazarus & Folkman, 1984 p.141). Coping strategies have been placed in two categories (Billings & Moos, 1981): Approach, which is defined as strategies targeting one's appraisal of the situation or managing or modifying the stressful situation; and Avoidant, which is marked by turning away from threat-related cues. Folkman and Lazarus (1980) argue that the strategy employed by the individual will depend on their appraisal of the situation and the strategies available. They stated that the coping strategy acts as a mediator between stress and its potential effects. Some researchers indicate that each individual, although appraising each situation differently, has a stable hierarchy of preferred strategies (Frydenberg & Lewis, 1994). Coping strategies could therefore be a trait which is invariant for the individual and which can be detected and used as a predictive tool to highlight vulnerable prisoners who may self-harm.

The use of avoidant coping strategies has been shown to link to key risk areas themselves associated with suicidal or self-harm attempts. For example, substance abusers have been shown to make use of avoidant coping strategies (Franken, Hendriks, Haffmans, & van der Meer, 2001; Hyman, *et al.*,2009). In addition, substance

users with a diagnosis of personality disorder have also been found to have lower self-efficacy and to use more maladaptive coping strategies (Smyth & Wiechelt, 2005). Research in prisons has highlighted the finding that prisoners who self-harm are more likely to use avoidant strategies than those who do not self-harm (Dear, Thomson, Hall & Howells, 1998; Slade & Gilchrist, 2005). This is compatible with the self-harm research, based on community and non-forensic samples, which reports findings of an inability to express feelings, with self-harm being used as a form of communication (Snow, 2002). Linehan, Camper, Chiles, and Strosahl (1987) in a study comparing suicide attempters, suicidal ideators and non-suicidal psychiatric in-patients found that the suicide attempters were more passive and less active in their problem-solving. This finding was replicated by Orbach, Bar-Joseph, and Dror (1990) who also found that the solutions offered by those who harmed themselves were less versatile, less relevant and less future-focussed than non-suicidal patients.

Avoidant coping is a consistent finding amongst a range of at-risk groups and within suicidal and self-harming people in the community and within prison. The cry of pain model would indicate that ineffective coping with a stressful situation may encourage greater feelings of entrapment as the emotions and the situation remain constant. The utilisation of effective approach coping behaviour may therefore provide a buffering effect between a situation perceived as stressful and the perception of entrapment.

2.2.3.3 Resilience

Resilience is defined as 'the capacity for successful adaptation to change, a measure of stress coping ability or emotional stamina, the characteristic of hardiness and invulnerability, or the ability to thrive in the face of adversity or recover from negative events (Roy, Sarchiapone, & Carli, 2007, p.265). Research has shown that resilience is relevant to the stress-self-harm process and is considered to be a protective factor in relation to the potential development of many psychiatric disorders after traumatic or difficult life events (Campbell-Sills, Cohan, & Stein, 2006; Hjemdal, Friborg, Stiles,Rosenvige, & Martinussen, 2006).

The link between trauma and suicidal and self-harm behaviour may be tempered by the presence of resilient traits and coping styles within an individual. Low resilience has been shown to have an impact on negative outcomes. For example, substance users have been found to have lower resilience than non-substance using controls (Cuomo, *et al*., 2008). In a study of abstinent substance users, Roy, Sarchiapone, and Carli (2007) evaluated childhood trauma and resilience in relation to attempted suicide, finding that patients who had attempted suicide had significantly lower resilience scores and higher levels of childhood trauma than those who had not attempted suicide. Patients who had experienced childhood trauma did not differ in resilience score from those who had not experienced such trauma. This finding thus suggests that resilience moderates the potential for childhood trauma as a risk factor for attempted suicide. Other studies indicate that resilience mediates the effect of life events on perceived stress (e.g. Davison, 2005; Hjemdal, *et al*., 2006) indicating resilience and coping should be

assessed rather than merely the presence of a negative life event per se. The cry of pain model would suggest that it is a combination of high perceived stress of an event, ineffective coping and low resilience which predicts future maladaptive strategies, such as suicide attempts.

2.2.3.4 Locus of Control

Locus of control relates to the extent to which a person perceives events as being a consequence of his or her own behaviour and therefore potentially under personal control. If the person attributes the event to luck or powerful others, then this is termed external locus of control. If the person attributes the event to personal effort, then this belief is termed internal locus of control (Craig, Franklin & Andrews, 1984; Rotter, 1954).

An external locus of control has been linked with 'learned helplessness' which is described as a failure to escape having learnt that a situation is uncontrollable or inescapable (Pittman & Pittman, 1979; McClure, 1985). In relation to the cry of pain model, the sense of being trapped and unable to escape is a key aspect of the perception of entrapment. A number of studies suggest a relationship between an external locus of control and increased suicide risk (Evans, Owens, & Marsh, 2005; Lauer, de Man, Marquez, & Ades, 2008; Topol & Reznikoff, 1982). This link may be due to the link with entrapment and may also, possibly, be supported through the activation of the helplessness script once all aspects are in place. This is supported by the finding that those with an external locus of control are more likely to perceive

events as stressful, as they believe they lack personal ability to exert control over them (Roddenberry & Renk, 2010). It may be that when an individual feels competent (internal locus of control) and able to handle stressful situations, they are more likely to opt for approach coping strategies as they feel able to make changes (Mo, Shen, & Zhou, 2009; Roddenberry & Renk, 2010) . This is supported by Kilmann, Laval, and Wanlass (1978) who report that those with high external locus of control reported significantly more difficulty adjusting to life events than those with high internal locus of control. Those utilising approach strategies are more likely to solve the problem and reduce distress and feel less trapped or defeated by their situation.

2.2.3.5 Summary

The research considering the Entrapment aspects of the cry of pain model indicates that factors linked to feelings of entrapment: hopelessness, coping style, resilience and locus of control have been supported. The research indicates that these aspects of entrapment play a central role as predictors of risk in relation to suicidal and self-harm behaviours. Having considered the roles of stress, defeat and entrapment in the development of risk, the final key aspect of the model relates to the perceived absence of rescue and this will be explored in the following section.

2.2.4 Perceived absence of rescue factors and feelings of social isolation

The suicide and self-harm literature has repeatedly identified the lack of social support as an area of risk and a large body of research indicates that adequate social support can protect people in crisis from a range of physical and mental health problems (Cobb,

1976; Turner, 1983; Wilcox, 1981). Conversely, the absence of support is linked to a range of poor outcomes. For example, the development of substance use issues has been related to poor parental support (Measelle, Stice, & Springer, 2006; Wills, Resko, Ainette, & Mendoza, 2004). Patients with borderline personality disorder also report poorer social support than non-BPD controls (Clifton, Pilkonis, & McCarty, 2007). A number of studies have highlighted the role of social support as central to protection against suicidal behaviour or if social support is impaired, that it can increase the risk of suicide, (Bille-Brahe, *et al*., 1999; Heikkinen, Aro, & Lannqvist, 1994). The support for the stress-buffering effects of received social support is not as strong as the stress-buffering effect of the perception of social support (Cohen, McGowan, Fooskas, & Rose, 1984; Wethington & Kessler, 1986). That is, the number of people in a social network is less important than the quality of support the individual perceives that they receive whether from just one or more people. The stress-buffering effect of perceived social support as a protective factor in relation to attempted suicide has been reported by Thompson, Kaslow, Short, and Wyckoff (2002) who compared people who presented at hospital after a suicide attempt compared to non-suicidal patients. They reported that perceived social support from family and friends mediated the relationship between self-esteem and suicide attempts and those with greatest perceived support had a greater perceived effectiveness in obtaining resources. In a further study of university students, the perception of social support was reported to be the major predictor of lower levels of suicidal ideation, independent of degree of self-reported depression and hopelessness severity (Chioqueta & Stiles, 2007). There is also support for the protective nature of perceived social support in the development of psychiatric disorders from those at highest risk due to parental psychopathology. Hoefnagels,

Meesters, and Simenon (2007) reported that higher perceived stress and negative social support predicted a lower level of psychiatric symptoms in adolescents, and that the presence of social support served as a direct mediating factor.

Studies which refer directly to the cry of pain model have shown some promising results in relation to social support. Suicidal patients were found to have lower levels of social support in comparison with non-suicidal hospital controls (O'Connor, 2003). The same study also found a moderating effect of social supports on potential suicide risk with the presence of social support reducing suicide risk. Rasmussen, *et al*. (2010) provide partial support for the role of social support, finding that patients who self-harmed had lower levels of social support than hospital controls, although they did not find a moderating effect of social support for the entrapment-suicide ideation relationship as they had predicted from the model. The authors suggest this may be due to an overall lower level of social support from both experimental and control groups making it difficult to identify an interaction effect.

Overall, the research supports a stronger role for perceived social support rather than actual support received or the numbers of others in a support network in buffering risk to suicidal behaviour.

2.2.5 Prison environmental effects

Various authors have highlighted processes particular to the prison environment which may accentuate the risk of self-harm or suicidal ideation. The first and most relevant event is of imprisonment itself, with the experiences of arrest, the court process and concerns regarding practical issues experienced by all prisoners undergoing the transition from community life into being placed into prison. Zamble and Porporino (1988) found that emotional distress was at its highest at the earliest stages of custody with prisoners who had served previous prison sentences often finding the experience hardest. This fits with the cry of pain model which proposes that previous experiences create a mood induced pattern in thoughts and behaviour (Williams, *et al*., 2006). Hence, previous negative prison experiences re-activate patterns of mood, thought and behaviour which are intensified when re-entering the prison environment.

The prison environment differs in many ways from environments prisoners would be familiar with within the community. Additional stressors which have been noted by researchers include bullying (and no means of escape), isolation (and punishment) through segregation, lack of work/activity opportunities leading to being locked in single cells for over 20 hours a day and difficulties in keeping in touch with family and friends (Ireland, 2005; Liebling, 1992, 2005). Prisons by their nature, involve deprivation and less freedom of choice. Environmental theories of the effects of imprisonment suggest that the time spent in prison results in experiences of powerlessness, being on the receiving end of unpredictable and coercive power and loss of family contact all of which contribute to the pains of imprisonment (Weishaar &

Beck, 1992). Such factors increase vulnerability to processes described in the cry of pain model as the prison environment serves to intensify feelings of defeat (e.g. through bullying), reduce chances of escape and use of adaptive coping strategies (due to reduction in available options) and with loss of contact with the usual social support structure. The increased risk of isolation within segregation units is also likely to increase feelings of defeat and entrapment as well as reducing coping strategies available. In this context Bonner (2006) found that prisoners housed in segregation (single cells separate from other prisoners) had significantly higher scores on measures of depression and suicide ideation in relation to other prisoners; a hierarchical regression model of suicide ideation found significant interactions between suicide attempt lethality history and hopelessness with anticipated segregation stress, independent of depressed mood. The research supports the cry of pain model as relevant to a prison environment and may provide insight into the process by which the risk in prison is heightened in comparison with the community.

2.2.6 Summary of the cry of pain model research

O'Connor (2003) noted that 'the importance of the defeat, entrapment and escape potential (social support) variables should not be underestimated. When considered alongside clinical factors including depression and hopelessness, the variables drawn from the cry of pain model enhanced the statistical classification with respect to whether participants were suicidal or not'(p. 305). Using a multivariate logistic regression model, O'Connor correctly classified 90% of the participants into the suicidal or non-suicidal groups. Social support, defeat and the interaction between escape

potential and social support were the only significant contributors to the model. A high degree of social support was protective. This study suggested that defeat and entrapment were key factors in understanding suicidal behaviour, with opportunity for rescue playing a moderating role. Research discussed which has evaluated the cry of pain model including the 'arrested flight' elements has shown its utility in understanding and predicting risk of suicide generally and within schizophrenic patients as well as the process of depression and anxiety (O'Connor, 2003; Rasmussen, *et al.*, 2010). Research has not yet evaluated the model's utility in explaining the process of non-fatal intent self-harm. This will be explored in the present research.

2.3 CONCLUSION

The literature is dominated by static and demographic factors exploring correlates and risk factors for self-harm and suicide. These are most often historical or biographical factors including previous self harm, mental health or personality disorder, substance misuse, emotional neglect, maltreatment and abuse in childhood. Clear dynamic, proximal and protective factors are less frequently examined within the research literature, which in turn limits the effectiveness of risk assessment in practice. Even with the risk areas which have been identified, there is a current lack of clarity regarding the process by which these factors may lead, in some cases, to increased risk of suicidal behaviour or self-harm. The cry of pain model has demonstrated some promising findings in explaining a process which links these elements. It is yet to be tested within prison and in order to do so, an assessment of each element of the model is required in order for analysis of the impact of each aspect on the risk of self-harm

and suicide. This can be achieved through measuring the following key variables in relation to the four aspects of the model:

- **Presence of stressors:** perception of perceived stress;
- **Presence of defeat**: level of the perceptions of defeat;
- **Perception of entrapment**: measurement of level of entrapment, utilised coping strategies, levels of resilience and level of hopelessness; locus of control;
- **Perceived absence of rescue factors**: appraisal of perceived social support.

The study will include all of these aspects to consider whether there are clear links between this model and self-harm and suicidal behaviour in a prison population.

Kraemer, Schmidt, and Ebert (1997) argued that to term a variable a 'risk factor' it must be assessed before the outcome occurs. At present, suicide and self-harm research is often retrospective in design; suicide research often uses the retrospective psychological autopsy methodology which misses the necessary detail to guide understanding of process issues. There is a paucity of prospective studies considering self-harm within the prison environment. Furthermore there are none identified which test a theoretical model and gain their data within the first hours in custody; the highest time of risk. A prospective study is, therefore, long overdue in considering the risk and protective factors for self-harm and suicidal behaviours and as a result, this study will provide a prospective study from the early hours of custody.

2.4 AIMS AND HYPOTHESES

It is hypothesised that, in line with the cry of pain model, those at greatest risk of suicide; those who had engaged in self-harm prior to the study; and those who self-harmed within prison would have the following in comparison to controls.

- **Presence of stressors:** higher scores for perception of perceived stress;
- **Presence of defeat**: scores indicating higher levels of perceptions of defeat;
- **Perception of entrapment**: higher scores for entrapment, lower scores for approach coping strategies and higher scores for avoidant coping strategies, lower scores for resilience and hopelessness and a more external locus of control;
- **Perceived absence of rescue factors**: lower perceived levels of social support.

Certain demographic and clinical measures which have been shown through previous research to have relevance with the prediction of self-harm and suicide are also considered. It was hypothesised that for those at greatest risk of suicide; those who had engaged in self-harm prior to the study; and those who self-harmed within prison would have the following in comparison to controls:

- increased feelings of depression;
- younger age;
- increased number of times in prison;
- remand status (compared to convicted status).
- suicide risk (for prospective self-harm study)

Three analyses will be undertaken in the study:

1. Comparison of those who report previous self-harm with those who do not;
2. Comparison of those at greatest suicide risk with those with lesser suicide risk;
3. Prospective study of those who engage in self-harm in prison compared with those who do not.

CHAPTER 3: METHODOLOGY

3.1 INTRODUCTION

This chapter links the literature and theoretical reviews in Chapters 1 and 2 and the research conducted. It explains the research design and the methodology, including the choice of measures in testing the hypotheses. This chapter also considers ethical considerations and procedures. The study was a prospective study into the prediction of self-harm and suicide risk within prison. Quantitative methodology was employed and included the collation of baseline data using questionnaires within the first hours of imprisonment measuring key factors as identified within the literature and as predicted by the cry of pain model. The baseline measures included measurement of resilience, coping strategies, locus of control, feelings of defeat and entrapment, feelings of depression, hopelessness and suicide critical items, perceived stress and perceived social support. Demographic information was also obtained. Two hundred and seventy prisoners participated in the study. The study then followed up these participants to identify those demonstrating self-harm or suicidal behaviour. The follow-up period lasted for four months to capture the highest risk period.

3.2 ETHICAL CLEARANCE

Before commencement of the study, ethical approvals were obtained from HM Prison Service for the London region and Roehampton University (details attached at Appendix H and I). Agreement for access to prisoners was also received from the Governor and induction manager at the prison. Requirements were also discussed and agreed with the

NOMS Safer Custody and Offender Policy group (SCOP) allowing access to the national Incident Reporting System (IRS) from which details of any self-harm or suicidal behaviour incidents could be obtained.

3.3 PARTICIPANTS

Two hundred and seventy adult (over 21) male prisoners participated in the study. Two participants could not be identified as they did not provide full name or prison number and were removed from the research data. All participants required verbal or written ability in the English language due to the questionnaires only being validated in English. Non-English speakers are therefore not included in the study.

The participants ranged in age from 21 to 71, with a mean age of 33.5 years (S.D. 10.29). 34.7% were identified as White British (including Irish and Scottish), 8.2% were Other white, 14.9% were Black Caribbean, 14.2% were Black African, 7.5% Other Black, 7.9% were from Asian backgrounds, 7.5% were from Mixed White and Black Caribbean, 3.3% from other Mixed backgrounds and 0.4% Chinese background with the remaining from backgrounds not otherwise specified.

Of reported religious affiliation, 34.1% stated ‘none’, 28% were Church of England, 17% were Muslim, 11.1% were Roman Catholic, 4.8% were another Christian denomination,

0.7% Buddhist, 0.7% were Sikh, 0.4% were Jewish, 0.4% were Jehovah's Witness and the remaining 1.8% were listed as 'other'.

In terms of the reason for prison placement 48.1% were on remand, 12.3% were convicted but not yet sentenced, 35.6% were sentenced, 3.4% were on immigration detention or awaiting extradition and 4.2% were recalled following breach of license conditions.

41.3% of the participants were first time prisoners; 34% of those with repeat prison sentences had been at the prison where the research was being undertaken on a previous occasion. 17.7% of participants had been in prison only once previously, 7.4% twice previously, 5.9% three times previously, 5.5% four times previously and 4.1% five times previously. 7% did not answer the question. The remaining 11.1% had been in prison more than five times up to a maximum of twenty-five previous prison sentences.

22.9% reported having previously self-harmed, 22.3% of participants admitted to previous illegal or non-prescribed medication drug use and 14.9% indicated that they had a current mental illness with a further 3.8% indicating a previous mental illness which was not active. 7.9% of participants indicated they had been diagnosed with a personality disorder and 5.6% indicated a current serious physical illness.

2.95% (8) participants were on a self-harm or suicide management form referred to as an Assessment, Care in Custody and Teamwork (ACCT) form at the time of first stage procedure. A further 2.95% (8) ACCTs were opened by the research team due to responses indicating suicidal ideation.

3.4 PROCEDURE/RECRUITMENT METHOD (FIRST STAGE PROCEDURE)

This study required data collection from prisoners within the first days of arrival within prison as this is the period of greatest risk of self-harm or suicidal behaviour (Liebling, 1992; Lohner & Konrad, 2007; Towl & Crighton, 1998) and would allow for the measure of vulnerabilities on arrival in prison before other prison environmental factors were experienced. All new arrivals at one of the local prisons in the London region were approached at the induction session where new prisoners are informed of the processes and activities to expect within the prison. The induction session takes place on the morning after arrival at the prison. If a prisoner did not arrive at induction, due to illness, detoxification from substances or mental health concerns, he was approached by the researcher in liaison with the medical staff, up to a maximum of four days after arrival.

Over a three month period, all newly arrived prisoners were approached and asked if they would participate in the study. The purpose and method of the study was explained to each participant and it was stressed that it was not a requirement of the prison to participate in the study and they could withdraw from the research at any

stage. Participants were provided with a verbal explanation of the study and requirements and a written consent form which explained the study, the use of prison service information and the follow up on future self-harm (see Appendices F). The participants were asked if they would require assistance in reading the consent form and if this was required the researcher sat with the participant and read through the consent form. On signing the consent form, the measures that form part of the study were provided to the participant.

Once consent has been agreed, participants were asked to complete a front page of a booklet which asks for their name and prison number, so participants could be followed up over time. To maintain confidentiality, this page was removed once a research number has been assigned and the list was kept securely in compliance with the Data Protection Act. Only the researcher had access to the list of names and corresponding research numbers. The questionnaires were completed in a group setting but each participant was seated out of clear sight of other participant's questionnaires. If participants wished to complete the measures privately or required further assistance, they were able to move to another part of the room or to a private room. If required, each question was read verbally with the researcher recording their responses. This was required for twelve participants.

On completion, participants were provided with a debrief sheet (see Appendix G) which outlined the study, contact information and available support services. Completed

questionnaires were checked for full completion and if data were missing then the researcher would return to the participant within two hours to ask for the missing answers to be completed to maximise completion.

3.4.1 Ethical precautions

Due to the nature of the study, it was important to consider a number of ethical issues. These included the ethical precautions required if participants identified that they were at high risk of suicide or self-harm and the actions to be taken if that risk was identified. As outlined in the consent form, if any question answered indicated high imminent risk of self-harm or suicide the prisoner was approached by the researcher to confirm accuracy of answers and if not already open, an ACCT form (self-harm or suicidal risk form) was opened with general indication of risk area included. During the study eight ACCT forms were opened by the researcher. This may have impacted on the study, with potential protective elements being employed of opening an ACCT form, or allowing prisoners to express their feelings. It was identified that during a similar period in the following year, there were 92 incidents of self-harm in comparison to 96 during the study period. This would indicate that the study did not directly impact on the likelihood of self-harm.

To maintain confidentiality of participants from staff or others not related to the research, completed questionnaires were numbered and the consent form and identifying pages (names and prison numbers) were removed from the questionnaire

answers and kept securely in a separate location. A master list of the research numbers and names and prison numbers was kept securely by the researcher without access to any other person. All information was securely maintained as per Data Protection Act arrangements.

A possible conflict was due to the researcher being employed at that time as the Head of Safer Custody, with responsibility for the prison procedures in relation to suicide and self-harm prevention. In order to mitigate this possible conflict, during the research period the researcher did not complete any assessment or intervention with individual prisoners who had been approached as part of the research. All tasks were allocated to other team members and monitored.

3.5 MEASURES

Demographic information was requested on the questionnaire or gathered from the LIDS (prisoner information) computer system. In addition, a battery of nine questionnaires was employed in this study. These questionnaires measured the aspects as outlined in section 2.4 to test the hypotheses. The following questionnaires were chosen to test those aspects: Perception of stress was measured by the Perceived Stress Scale (PSS); The presence of defeat was measured by the Defeat Scale; The perception of entrapment was measured by the Entrapment Scale, Coping Response Inventory (CRI), Resilience Scale-25, hopelessness scale as part of the Depression, Hopelessness and Suicide screening scale (DHS) and Locus of Control of

Behaviour scale (LCB); Finally, the perceived absence of rescue factors was measured by the Social Supports Appraisal Scale (SS-A). The validity, reliability and available normative populations for each choice of questionnaire are outlined in the relevant section below. Copies of all questionnaires are in Appendix F and the measures are detailed in the following sections 3.5.1- 3.5.9.

3.5.1 Demographic information

This provided information on key risk areas and general demographic information as identified in previous research. These included the participant's ethnic category and whether participants: had been in prison before; had previously been in the prison where the research was being undertaken and how many times participants had previously been in prison; had previously hurt themselves; used drugs or another's medication in the past month; had a current mental illness and if so, which illness; used to have a mental illness but not currently and if so, which illness; had been told they have a personality disorder and if so which; or had a serious illness.

3.5.2 Perceived Stress Scale (PSS)

The Perceived Stress Scale (PSS; Cohen, Karmack & Mermelstein, 1983) is a 14-item self-report measure of self-appraised stress (e.g. 'in the last month, how often have you been upset because of something that happened to you unexpectedly?'). Respondents are asked to rate the extent of agreement with these items across a 5-point Likert-type scale ranging from 0 (never) to 4 (very often). Higher scores reflect elevated levels of

stress. Internal consistency was within acceptable limits with Cronbach alpha for a suicidal patient group as .75 (O'Connor, 2003). Concurrent validity was reported by exploring the relationship between perceived stress and life events, with an adequate positive correlation reported between the two variables, r = .2, N = 332, p<.01 (Cohen *et al*., 1983). The measure has been used in a USA study of incarcerated men (Glass & Bieber, 1997) although neither internal consistency or means and standard deviations were reported. This measure was chosen due to adequate reliability and validity, testing the key aspect of perceived (rather than physiological or life-event) stress and it has been previously used to test the cry of pain model allowing for comparisons to be made (O'Connor, 2003). In the current study the Cronbach Alpha coefficient was .824.

3.5.3 Defeat Scale

The Defeat Scale (Gilbert & Allan, 1998) is a 16 item self-report measure of feelings of defeat (designed to capture sense of failed struggle and losing rank). Respondents are asked to rate how well each statement reflects how they have felt in the last seven days on a 5 point Likert-type scale ranging from 0 (never) to 4 (always). Higher scores reflect higher levels of feelings of defeat. Cronbach Alpha is reported as .94 for students and .93 for male depressed patients confirming high internal consistency (Gilbert & Allan, 1998). Concurrent validity is indicated as there is good positive correlation between the Defeat Scale and a measure of depression (Beck Depression Inventory, Beck, Rush, Shaw & Emery, 1979) even after controlling for hopelessness amongst depressed patients (r = .61, N = 86, p<.001). This measure has not been utilised in published research on a prison population. It was utilised in this study as it is

the sole scale designed to directly measure the defeat concept of the cry of pain model. In the current study the Cronbach Alpha coefficient was .934.

3.5.4 Entrapment Scale

The Entrapment Scale (Gilbert & Allan, 1998) is a 16 item self-report measure of feelings of entrapment. Respondents are asked to rate how much each statement is 'Like You' on a 5 point Likert-type scale ranging from 0 (not at all like me) to 4 (extremely like me). High scores indicate a higher level of feelings of entrapment. The Entrapment Scale measures two factors of entrapment; internal entrapment (related to escape motivation triggered by internal feelings and thoughts; external entrapment (relates to perception of things in the outside world that induce escape motivation). The Cronbach Alpha for the internal entrapment scale was .93 for students and .90 for male depressed patients, suggesting a high level of internal consistency for both a non-clinical and clinical depressed group. The Cronbach Alpha for the external entrapment scale was .88 for a student group and .89 for a depressed group (Gilbert & Allan, 1998). These findings suggest a high level of internal consistency. Concurrent validity is supported by a good positive correlation between both the external and internal entrapment scales and feelings of depression (Beck Depression Inventory, Beck, Rush, Shaw & Emery, 1979) amongst depressed patients. External entrapment was reported as $r = .54$, $N = 86$, $p<.001$, Internal entrapment was reported as $r=.62$, $N = 86$, $p<.001$. This measure has not been utilised in published research on a prison population. It was utilised in this study as it is the sole scale designed to directly measure the entrapment concept of the cry of pain model. In the current study the Cronbach Alpha coefficient

for the full scale was .918, for external entrapment was .852 and for internal entrapment was .889.

3.5.5 Resilience Scale -25

The 25-item Resilience Scale (RS) (Wagnild & Young, 1993) is a self-report questionnaire and was one of the first instruments developed to measure resilience. The five characteristics of resilience measured are self-reliance (believing in oneself, recognising and relying on one's personal strengths and capabilities); Meaning (the realisation that life has a purpose and recognition that there is something for which to live); Equanimity (a balanced perspective on life and experiences and taking what comes); Perseverance (act of persistence despite adversity or discouragement); and Existential aloneness (the realisation that each person is unique and that whilst some experiences can be shared, others must be faced alone). Respondents are asked to rate the extent of their agreement with the items on a 7 point Likert-type scale from 1 (strongly disagree) to 7 (strongly agree). Higher scores reflect higher levels of resilience. The scale has been widely used and has acceptable internal consistency with Cronbach alpha co-efficients for males of between .85 and .94 (Nygren, *et al*., 2005; Wagnild, 2009). Convergent and discriminant validity was reported as the resilience scale was positively correlated with an instrument measuring similar constructs, the Health Promoting Lifestyle Profile (Walker, Sechrist & Pender, 1987). There were good positive correlations on the relevant factors: self actualization, interpersonal support and stress management, r = .62, .49 and .46 respectively. It has not been possible to identify research using this scale within a prison population. This measure was chosen as it has adequate reliability

and validity and is a widely used scale across populations. In addition, no other measure could be identified which had been widely used or tested within the prison population. In the current study the Cronbach Alpha coefficient was .925.

3.5.6 Coping Responses Inventory-Adult Form (CRI- Adult)

The Coping Responses Inventory – Adult Form (Moos, 1993) is a measure of eight different types of coping responses to stressful life circumstances. These responses are measured by eight scales- Logical Analysis (LA), Positive Reappraisal (PR), Seeking Guidance and Support (SG), Problem Solving (PS), Cognitive Avoidance (CA), Acceptance or Resignation (AR), Seeking Alternative Rewards (SR) and Emotional Discharge (ED). The first set of four scales measure approach coping; the second set of four scales measure avoidance coping. The first two scales in each set measure cognitive coping strategies; the third and fourth scales in each set measure behavioural coping strategies. Each of the eight scales is composed of six items, totalling 48 items on this self-report measure. Individuals select and describe a recent stressor and use a 4-point scale varying from 0 (not at all) to 3 (fairly often) to rate their use of each coping strategy. Higher scores reflect greater use of each strategy type. The internal consistency is adequate with Cronbach Alpha reported between .61 and .74 for the eight scales (Moos, 1993). This widely used assessment tool is reported as showing adequate convergent validity when tested against relevant measures of the Coping Strategy Indicator (CSI, Amirkhan, 1990) showing positive correlations between relevant measures on the approach and avoidant aspects: approach sub-scales on the CRI compared to problem solving on the CSI, $r = .64$, $N = 800$, $p<.001$; avoidant sub-

scales on the CRI compared to avoidance scales on the CSI, r = .65, N= 800, p<.001 (Mohino, Kirchner, & Forns, 2004). This measure was chosen because it has been used with prison populations in different countries (Australia, Spain and the UK) with published normative data (Dear, Thomson, Hall, & Howells, 1998; Mohino, *et al*., 2004; Slade & Gilchrist, 2005). In the current study the Cronbach Alpha coefficient for the eight sub-scales ranged between .635 and .714.

3.5.7 Locus of Control of Behaviour (LCB)

The Locus of Control of Behaviour Scale (Craig, Franklin & Andrews, 1984) is a 17 item scale designed to measure the level of perceived personal control and responsibility that participants have in relation to their behaviour. Respondents are asked how strongly they agree or disagree with statements ranging from 0 (strongly disagree) to 5 (strongly agree). Higher scores indicate a more external locus of control and lower scores a more internal locus of control. The scale includes 7 items focussed on internal LOC and 10 items linked to external LOC, with the internal locus of control items scored in a reverse direction. Craig *et al*. (1984) reported the scale to have good construct validity, correlating substantially with Rotter's I-E general expectancy scale (r = .67, N =123). The LCB scale was chosen for this study over other Locus of Control measures as this scale focuses on personal aspects of control instead of the more general locus of control as measured by Rotter's I-E scale. An adapted LCB scale has also been utilised extensively with the UK prison and probation populations as a measure used in the evaluation of accredited offending behaviour programmes (McDougall, Clarbour, Perry, & Bowles, 2009). In the current study the Cronbach Alpha coefficient was .803.

3.5.8 Depression, Hopelessness and Suicide Screening (DHS)

The Depression, Hopelessness and Suicide Screening Form (Mills & Kroner, 2004) is a screen for the presence of depression, hopelessness and indicators of current and prior risk of suicide. It was designed for use with a Canadian offender population. It is a 39-item self-report measure and respondents are asked to rate whether statements are True (T) or False (F) in relation to themselves. Some items are reversed at scoring. Higher scores reflect the increased presence of depression, hopelessness or suicide critical risk. In addition to the Depression and Hopelessness scales, there is also a Critical Item scale made up of 3 aspects, cognitive permissiveness of suicide, previous suicidal ideation and harm and current ideation. These sub-scales are linked with previous research of the key factors linking to imminent risk of suicide (Cassells, *et al*., 2005; Morgan & Stanton, 1997). The sub-scales of the suicide critical item scale have not been assessed for separate validity within published studies. In the current study the Cronbach Alpha co-efficient for each Critical item checklist sub-scale is .487, .883 and .661 respectively. These findings suggest a low level of internal consistency and the subscales of the suicide critical item scale will hence not be separated within the current analysis and the single scale will be referred to as the suicide critical item scale.

The Beck depression inventory (BDI) is a widely used measure of depression but this measure has been found to have reduced specificity within an offender sample (Boothby & Durham, 1999) and the DHS was developed to avoid items that have reduced specificity within the population whilst still validly measuring depression. The internal consistency of the DHS for an offender sample is within acceptable limits as

measured by Cronbach Alpha which is reported as .90 for DHS Total, .87 for Depression and .76 for hopelessness (Mills & Kroner, 2004). This measure was therefore chosen for this study due to the reliability, validity and available prison normative data for this measure. In the current study the Cronbach Alpha coefficient for the full scale, depression scale, hopelessness scale and suicide critical item scales were .943, .902, .882 and .887 respectively.

3.5.9 Social Support Appraisals Scale (SS-A)

The Social Support Appraisals scale (Vaux, *et al*., 1986) is a 23-item scale designed to identify the extent to which an individual believes that he or she is loved by, esteemed by and involved with family, friends and others. Respondents are asked to rate the extent to which they agree or disagree with statements ranging on a 4 point scale from 1 (strongly agree) to 4 (strongly disagree). Three scores can be computed, SS-A Total (sum of all 23 items); SS-A family (sum of 8 family items) and SS-A friends (sum of 7 friend items). Some items are reversed in scoring. Higher scores reflect a lower perceived level of social support. Cronbach Alpha levels are reported as .89 (SS-A total); .81 (SS-A family) and .83 (SS-A friends) in a psychiatric inpatient population (O'Reilly, 1995) reflecting adequate internal consistency. The validity of the SS-A has been confirmed in terms of concurrent, convergent and external validity with other subjective support measures. Significant strong positive correlations were found between the SS-A and Perceived Social Support measure (Procidano and Heller, 1983): with a student sample, r = .82 (family) and .72 (friends), N = 44, p<.001 (Vaux *et al*., 1986); and a psychiatric inpatient sample, r = .85, N = 60, p<.001 (O'Reilly, 1995). The

SS-A measure was chosen for this study as it measured the perceived social support (in contrast to actual social support level), had adequate reliability and validity and no valid prison-specific measures were identified. In the current study the Cronbach Alpha coefficient for the full scale, family and friends scales were .922, .843 and .895 respectively.

3.5.10 File Information

Demographic Information on all participants was gathered from the prison computer system (Local Inmate Database System: LIDS). Data relating to age, remand or conviction status was collected; the LIDS was also used to ensure questionnaire completion occurred within the first four days. The information gathered involved date of birth, date received into the prison, conviction/sentence status, sentence length and religion. Information on whether an ACCT (self-harm management) form was open was also recorded as the associated ACCT process and interventions may influence the risk of future self-harm.

The Means, Standard Deviation, Minimum, Maximum and Cronbach Alpha score of each measure and their factors are shown in Table 1.

Table 1: Mean, Standard Deviation, Minimum, Maximum and Cronbach Alpha for all measures

Measure	Sub-scale	Items per scale	Mean	SD	Min	Max	Alpha
Resilience Scale-25	n/a	25	129.78	26.27	39	175	.925
Entrapment Scale	*Total*	16	23.96	16.17	0	64	.918
	External entrapment	10	15.25	9.71	0	40	.852
	Internal entrapment	6	8.81	7.52	0	24	.889
Defeat Scale	*n/a*	16	24.77	14.02	0	64	.934
Perceived Stress Scale	*n/a*	14	42.36	9.42	18	64	.824
Coping Responses Inventory							
	LA	6	9.31	4.14	0	18	.657
	PR	6	10.11	4.21	0	18	.684
	SG	6	8.71	4.23	0	18	.678
	PS	6	10.47	4.22	0	18	.714
	CA	6	9.22	4.19	0	18	.691
	AR	6	8.95	4.17	0	18	.664
	SR	6	8.18	4.02	0	18	.635
	ED	6	7.1	4.09	0	18	.650
Social Support Appraisal		23	47.46	13.12	23	87	.922
	Family	8	15.82	5.53	8	32	.843
	Friends	6	14.71	4.84	7	28	.895
DHS		39	13.97	10.18	0	49	.943
	Depression	23	7.71	4.87	0	20	.902
	Hopelessness	10	3.97	3.27	0	14	.882
	Suicide Critical	12	2.31	3.12	0	15	.887
Locus of Control of Behaviour		17	33.67	13.41	0	69	.803

3.6 FOLLOW-UP STAGE (SECOND STAGE PROCEDURE)

The second stage of the study followed up all of the participants to determine whether they had engaged in self-harm or suicidal behaviour since completion of the questionnaires during the first stage of the study. The NOMS national Incident Reporting System (IRS) system was checked for any participants who were recorded as having engaging in self-harm during the intervening period. Additionally, each participant was followed up through the records at the study prison and any other prisons where participants had since been transferred in order to identify whether there had been any incidents of self-harm or suicidal behaviour which had not yet been recorded on the IRS. The follow up period was limited to four months as this includes the high-risk periods for both suicidal behaviour (Crighton & Towl, 1997) and self-harm (Ministry of Justice, 2010). This was also supported by the reducing numbers of prisoners with only sixty-eight of the two hundred and seventy participants remaining in prison after this time.

CHAPTER 4: RESULTS

4.1 INTRODUCTION

Three sets of analyses were completed to test the cry of pain model and; specific hypotheses tested were that those at risk of self-harm and suicide would present the following (as outlined in Section 2.4): **Presence of stressors:** higher scores for perception of perceived stress (measured by the Perceived Stress Scale); **Presence of defeat**: scores indicating higher levels of perceptions of defeat (measured by the Defeat scale); **Perception of entrapment**: higher scores for entrapment (measured by the Entrapment Scale), lower scores for Approach coping strategies and higher scores for avoidant coping strategies (measured by the Coping Responses Inventory), lower scores for resilience (measured by Resilience Scale) and hopelessness (measured by the DHS-hopelessness) and an external locus of control (measured by the Locus of Control of Behaviour scale); **Perceived absence of rescue factors**: lower perceived levels of social support (measured by the Social Support Appraisal Scale); increased depression (measured by the DHS-depression). Additional factors were also predicted: younger age; increased number of times in prison; remand status (in comparison to convicted status). SPSS (version 17.0) was utilised for all analysis undertaken.

Three sets of analyses were undertaken as follows: (i) Previous self-harm: Discriminant function analysis was undertaken to identify variables which distinguished participants who disclosed previous self-harm compared with participants who had not reported previous self-harm; (ii) Predictors of suicide risk: A hierarchical regression analysis was

undertaken to examine which variables were related to increased or decreased suicide risk (as defined by the DHS - suicide critical item scale; (iii) Predictors of future engagement in self-harm: A logistic regression was computed to consider which variables would predict those prisoners who self-harmed during the follow-up period with those who did not self-harm. In addition, a comparison was undertaken of study means and standard deviation with published normative data for all measures to consider the normative values for this population.

The following measures were utilised in the analyses: Resilience Scale measuring resilience; Entrapment Scale measuring feelings of entrapment (two subscales measuring internal and external entrapment); Defeat Scale measuring feelings of defeat; Perceived Stress Scale (PSS) measuring perceived stress; Coping Response Inventory (CRI) measuring coping styles in eight subscales grouped into two main categories (approach and avoidance coping); Social Support Appraisals Scale (SS-A) measuring perceived social support (two subscales measuring family and friends support); Locus of Control of Behaviour (LCB) measuring locus of control (ranging from internal to external locus of control); Depression, hopelessness and suicide screening Scale (DHS) measuring 3 sub-scales, depression, hopelessness and suicide critical items. In addition three demographic variables based on previous research were analysed when appropriate, these are age, number of times previously in prison and conviction status (remand or convicted prisoner).

To begin the analysis, the factor structure of all the measures was investigated to consider which factors were obtained with the current sample. This structure was compared with published factor structures. This allows for the use of appropriate sub-scales in hypothesis testing. An analysis of normality of the distribution of scores was then undertaken with all measures to consider if any measures violated the assumption of normality as this was an assumption for all statistical tests undertaken.

4.2 PRELIMINARY TESTING

4.2.1 Principal Components Analysis

A number of measures in this study have been used as single scales or with sub-scales when tested with different populations in previous research. Of most relevance, the structure of these measures has not been considered for a prison population and this requires exploration. Principal components analysis was therefore undertaken in order to explore the factor structure of the scales with the current sample. The scales with published sub-scales were: Entrapment Scale (published as a single scale and a two factor scale- internal and external entrapment), Coping Responses Inventory (eight sub-scales in two groupings Approach and Avoidance coping), Social Support Appraisal Scale (two sub-scales: family support and friend support; plus generic items not identified as a sub-scale), and the Depression, Hopelessness and Suicide screening Scale (three sub-scales: depression, hopelessness and suicide critical items). The scales without reported sub-scales were the Defeat Scale, Perceived Stress Scale and the Resilience Scale (although there have been attempts to theoretically suggest factors underlying this scale). Although the Locus of Control of Behaviour scale includes both internal and

external locus of control items there is only one score obtained and so it is most often used as a single scale (internal locus of control (LOC) reduces the score and external LOC increases the score).

Throughout the analysis, an oblique rotation method, 'direct Oblimin rotation', was employed where required. This is due to the expectation that the factors within each questionnaire are likely to be related and therefore correlated. Kass and Tinsley (1979) recommend having at least 5-10 participants per variable and the sample size for all questionnaires is therefore adequate although there are two questionnaires with a large number of variables (CRI Scale and DHS Scale) which are at the lower end of this recommended level. For these larger questionnaires the position of Guadagnoli and Velicer (1988) will be considered. They suggest that if a factor has 10 or more item loadings of greater than 0.4 then it is reliable if the sample size is greater than 150. This is also supported by MacCallum, Widaman, Zhang and Hong (1999) who indicate that with commonalities in the 0.5 range, samples between 100 and 200 are large enough. The appropriateness of the analysis and the interpretation of factors will be undertaken for each measure, with reference made to published structures.

4.2.1.1 Resilience Scale

The 25 items of the Resilience Scale were subjected to principal components analysis (PCA) using SPSS. Prior to performing PCA, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of few

coefficients of .3 and above although the Kaiser-Meyer-Oklin value was 0.935 exceeding the recommended value of 0.6 (Kaiser, 1970, 1974) and the Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ($p<.001$) supporting the factorability of the correlation matrix.

Principal components analysis revealed the presence of five factors with eigenvalues exceeding 1, explaining 38.65% and 5.58%, 4.71%, 4.6%, 4.05% of the variance respectively. An inspection of the screeplot revealed a clear break after the first factor and this was supported by the results of Parallel analysis showing only one factor with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (26 variables x 250 respondents). This single factor supports the use of the full scale without factors as reported in previous research (Wagnild & Young, 1993). The factor loading for each question on this single factor is reported in Table 2 (See Appendix A, Tables A1-A3 for full analysis).

Table 2*: Factor loadings for Resilience Scale: single factor extracted*

	Factor 1
RS17	.770
RS19	.746
RS24	.733
RS23	.726
RS21	.724
RS10	.721
RS03	.709
RS15	.695
RS16	.679
RS18	.679
RS04	.658
RS09	.655
RS14	.651
RS02	.648
RS01	.610
RS13	.594
RS07	.580
RS05	.571
RS06	.569
RS08	.562
RS22	.489
RS25	.486
RS20	.444
RS12	.359
RS11	.214

4.2.1.2 Entrapment Scale

The 16 items of the Entrapment Scale were subjected to principal components analysis (PCA) using SPSS. Prior to performing PCA the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of .3 and above, the Kaiser-Meyer-Oklin value was .92 exceeding the recommended value of .6 (Kaiser, 1970, 1974) and the Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ($p<.001$), supporting the factorability of the correlation matrix.

Principal components analysis revealed the presence of two factors with eigenvalues exceeding 1, explaining 46.33% and 6.82% of the variance respectively. An inspection of the screeplot revealed a clear break after the first factor and this was supported by the results of Parallel analysis showing only one factor with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (16 variables x 249 respondents). The separation into two factors (internal and external entrapment) as suggested by previous research (Gilbert & Allan, 1998) is not supported by the analysis. This scale has not been widely utilised or its structure tested with different populations and because the scale can also be used as a full scale, the Entrapment Scale will be used within this study as a full scale without separation into factors. The factor loading for each question on this single factor is listed in Table 3 (see Appendix A Tables A4-A6 for full analysis).

Table 3: ***Factor loadings for Entrapment Scales: single factor extracted***

	Factor 1
ES16	.793
ES14	.785
ES13	.782
ES12	.752
ES05	.743
ES11	.733
ES04	.721
ES07	.715
ES15	.704
ES06	.688
ES02	.672
ES01	.651
ES10	.636
ES08	.566
ES03	.477
ES09	.393

4.2.1.3. Defeat Scale

The 16 items of the Defeat Scale were subjected to principal components analysis (PCA) using SPSS. Prior to performing PCA the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of .3 and above; the Kaiser-Meyer-Oklin value was .937 exceeding the recommended value of .6 (Kaiser, 1970, 1974) and the Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance (P<.001) supporting the factorability of the correlation matrix.

Principal components analysis revealed the presence of two factors with eigenvalues exceeding 1, explaining 51.1% and 9.13% of the variance respectively. An inspection of the screeplot revealed a clear break after the first factor although the results of Parallel analysis indicate two factors with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (16 variables x 250 respondents). To aid in the interpretation of these factors, Oblimin rotation was performed. The rotated solution revealed that two factors were strongly loaded accounting for 60.2% of the variance. The first factor had 13 out of 16 items loaded above .4 which seemed to relate to the negatively worded items with the second factor only having 3 items with loading above .4, all of which relate to positively worded items (see Table 4 for factor loadings and Appendix A, Tables A7-A9 for full analysis). This analysis indicated that a uni-factorial conclusion is the most reliable conclusion. This conclusion is also in line with published research on the Defeat scale (Gilbert & Allan, 1998). The Defeat Scale will be used as a single scale in analyses for this study.

Table 4: ***Pattern Matrix from SPSS for PCA Oblimin rotation for Defeat Scales: 2 factors extracted***

	Factor	
	1	2
DS11	.844	
DS05	.831	
DS06	.820	
DS10	.797	
DS07	.762	
DS08	.759	
DS14	.734	
DS03	.722	
DS12	.688	
DS13	.680	
DS15	.673	
DS16	.627	
DS01	.619	
DS04		.875
DS02		.757
DS09		.674

4.2.1.4 Coping Responses Inventory- Adult Version (CRI)

The 48 items of the Coping Responses Inventory (CRI) were subjected to principal components analysis (PCA) using SPSS. Prior to performing PCA the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of few coefficients of .3 and above although the Kaiser-Meyer-Oklin value was .823 exceeding the recommended value of .6 (Kaiser, 1970, 1974) and the Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ($p<.001$) supporting the factorability of the correlation matrix.

Principal components analysis revealed the presence of thirteen factors with eigenvalues exceeding 1, explaining 19.6%, 8.12%, 4.55%, 3.93%, 3.53%, 3.26%, 3.06%,

2.85%, 2.7%, 2.61%, 2.43%, 2.26% and 2.13% of the variance respectively. On inspection of the screeplot there were two main factors and these factors were chosen for further interpretation. To aid in the interpretation of these factors, Oblimin rotation was performed. The rotated solution revealed that two factors were strongly loaded accounting for 27.71% of the variance (see Appendix A: Tables A10-A12 for analysis). The first factors had 21 items loading above .4 which seemed to relate to approach coping and the second factors had 13 items loading above .4 which seemed to relate to avoidance coping (Moos, 1993), detailed in Table 5. The number of participants per variable was approximately 5, which is at the low end for this analysis. The communalities for this analysis were largely in the .5 range which according to MacCallum *et al*., (1999) would suggest that the sample size is reasonable. To further aid the validity and test the factor structure, the analysis will be further separated into Approach and Avoidant Coping strategies, where the number of participants per variable is within accepted limits.

Table 5*: Pattern Matrix from SPSS for PCA Oblimin rotation for CRI Full Scale: 2 factors extracted*

	Factor		Approach or Avoidance
	1	2	
CRI01	.453		*Approach*
CRI02	.340	.255	*Approach*
CRI03	.491		*Approach*
CRI04	.596	-.400	*Approach*
CRI05		.534	Avoidance
CRI06	.118	.362	Avoidance
CRI07	.437		Avoidance
CRI08	-.116	.524	Avoidance
CRI09	.501	.109	*Approach*
CRI10	.538		*Approach*
CRI11	.579		*Approach*
CRI12	.614	-.108	*Approach*

CRI13		.568	Avoidance
CRI14		.548	Avoidance
CRI15	.557	-.227	Avoidance
CRI16		.342	Avoidance
CRI17	.374	.221	*Approach*
CRI18	.554		*Approach*
CRI19	.521	-.114	*Approach*
CRI20	.576		*Approach*
CRI21	.291	.456	Avoidance
CRI22	.139	.563	Avoidance
CRI23	.445		Avoidance
CRI24		.458	Avoidance
CRI25	.502	.184	*Approach*
CRI26	.485		*Approach*
CRI27	.421		*Approach*
CRI28	.568		*Approach*
CRI29	.173	.585	Avoidance
CRI30		.491	Avoidance
CRI31	.417		Avoidance
CRI32	-.109	.548	Avoidance
CRI33	.448	.300	*Approach*
CRI34	.547	.202	*Approach*
CRI35	.652		*Approach*
CRI36	.583	.168	*Approach*
CRI37	.171	.351	Avoidance
CRI38		.376	Avoidance
CRI39	.433		Avoidance
CRI40	.181	.351	Avoidance
CRI41	.579	.138	*Approach*
CRI42	.623		*Approach*
CRI43	.290		*Approach*
CRI44	.498	.131	*Approach*
CRI45		.519	Avoidance
CRI46	-.136	.642	Avoidance
CRI47	.450		Avoidance
CRI48	.247	.456	Avoidance

4.2.1.4.1 Approach Scales

A further principal components analysis was undertaken on the Approach scales. Prior to performing PCA on the Approach scales, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of few coefficients of .3 and above although the Kaiser-Meyer-Oklin value was .877 exceeding the recommended value of .6 (Kaiser, 1970, 1974) and the Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ($p<.001$) supporting the factorability of the correlation matrix.

The analysis of the Approach scales revealed the presence of 6 factors with eigenvalues exceeding 1. The results of Parallel analysis showed four factors with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (24 variables x 211 respondents) and this was supported by the Factor matrix which identified 4 factors with 3 or more factors with a loading of greater than .4. Four factors were therefore chosen for further interpretation. To aid in the interpretation of these factors, an Oblimin rotation was performed. The rotated solution revealed that four factors were strongly loaded accounting for 46.63% of the variance (see Appendix A: Tables A14 - A17 for analysis). The interpretation of the four factors could not be matched with the 4 factors identified in previous research on the CRI scale (Moos, 1993), with 1-4 items on 2 or more scales loading greater than .4 on factors 1,2 and 3. (See Table 6 for details of factor loadings).

Table 6: ***Pattern Matrix from SPSS for PCA Oblimin rotation for CRI Approach Scales: 4 factors extracted***

	Factor				Coping Strategy
	1	2	3	4	
CRI26	.759				PR
CRI41	.648				LA
CRI09	.628				LA
CRI33	.568				LA
CRI36	.568				PS
CRI28	.546				PS
CRI10	.538				PR
CRI25	.531				LA
CRI18	.524				PR
CRI34	.523		.413		PR
CRI42	.431				PR
CRI04		.742			PS
CRi01		.677			LA
CRI03		.606		.307	SG
CRI12		.528			PS
CRI17		.463		-.377	LA
CRI11		.440			SG
CRI35	.380	.390			SG
CRI20		.346			PS
CRI43			.683		SG
CRI44	.334		.637		PS
CRI02		.414	.422		PR
CRI19			.324	.557	SG
CRI27	.410			.491	SG

4.2.1.4.2 Avoidance Scales

Prior to performing PCA on the avoidance scales the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of few coefficients of .3 and above although the Kaiser-Meyer-Oklin value was .788 exceeding the recommended value of .6 (Kaiser, 1970, 1974) and the Bartlett's Test of

Sphericity (Bartlett, 1954) reached statistical significance ($p<.001$) supporting the factorability of the correlation matrix.

The analysis of the avoidance scales revealed the presence of 7 factors with eigenvalues exceeding 1, explaining 18.06%, 9.59%, 6.88%, 5.93%, 5.6%, 4.82%, 4.4% and 4.23% respectively. On inspection of the screeplot there were 4 main factors and this was supported by the Factor Matrix which revealed 4 factors with 3 or more factors with a loading of greater than .4. Four factors were chosen for further interpretation. To aid in the interpretation of these factors, an Oblimin rotation was performed. The rotated solution revealed that four factors were strongly loaded accounting for 40.45% of the variance (see Appendix A: A18-A21 for analysis). The interpretation of the four factors is broadly consistent with previous research on the CRI scale (Moos, 1993), with 5 of 6 acceptance and resignation (AR) items with a loading above .4 on factor 1; 5 of 6 items of seeking alternative rewards (AR) loading strongly on factor 2; 4 of the 6 items of emotional discharge (ED) with a loading above .4 on factor 3 and 3 of the 6 items of cognitive avoidance (CA) items with a loading above .4 on factor 4 (See Table 7 for factor loadings).

Table 7: ***Pattern Matrix from SPSS for PCA Oblimin rotation for CRI Avoidance Scales: 4 factors extracted***

	Factor				Coping Strategy
	1	2	3	4	
CRI29	.672				CA
CRI21	.626				CA
CRI22	.616				AR
CRI30	.611				AR
CRI14	.573				AR
CRI37	.498				CA
CRI06	.466				AR
CRI38	.444				AR
CRI07	.323				SR
CRI15		.743			SR
CRI23		.652			AR
CRI31		.580			SR
CRI39		.576			SR
CRI47		.574			SR
CRI48		.438	.399		ED
CRI32			.759		ED
CRI08			.723		ED
CRI16			.488		ED
CRI24					ED
CRI40			.331		ED
CRI13				.707	CA
CRI45				.626	CA
CRI05				.596	CA
CRI46				.493	AR

In conclusion, the CRI scale can be supported as a two factor scale, separated into 4 sub-scales under each of the overarching two scales. The two over-arching scales can be interpreted broadly into avoidant and approach coping scales as reported in previous research. The four sub-scales of the avoidant coping scale can also reasonably be interpreted into the 4 sub-scales as detailed in previous publications (Moos, 1993). The four factors of the approach scales were more mixed and were not clearly related to the previously reported four factors. Previous research has concluded that although

the avoidant and approach dichotomy is generally consistent, the eight sub-scales are less consistent with one or more scales being changeable (e.g. Zanini, 2003). However, previous factor analyses have tended to gain results which are broadly consistent with the concepts underlying the CRI and/or confirm the presence of coping sub-scales (Blalock & Joiner, 2000; Hart, Wearing, & Headey, 1995; Rijavec & Donevski, 1994). The published separate scales will be therefore be used in the analysis of this study but their use should be interpreted with caution.

4.2.1.5 Social Support Appraisal Scale (SS-A)

The 23 items of the Social Support Appraisal (SS-A) were subjected to principal components analysis (PCA) using SPSS. Prior to performing PCA, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of .3 or above. The Kaiser-Meyer-Oklin value was .901 exceeding the recommended value of .6 (Kaiser, 1970, 1974) and the Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ($p<.000$) supporting the factorability of the correlation matrix.

Principal components analysis revealed the presence of four factors with eigenvalues exceeding 1, explaining 39.92%, 9.69%, 7.29%, 4.88%, of the variance respectively. An inspection of the screeplot revealed a clear break after the third factor. This was further supported by the results of Parallel analysis which showed three factors with eigenvalues exceeding the corresponding criterion values for a randomly generated

data matrix of the same size (23 variables x 217 respondents). An Oblimin rotation was performed on the remaining three factors. The three factor solution explained a total of 56.7% of the variance. The interpretation of two of the three factors is consistent with previous research on the SS-A scale (Vaux *et al*., 1986), with 6 of 8 SS-A-family items with loadings above .4 on factor 1 and all 7 SS-A-friends items loading strongly on factor 2. Factor three contained 5 items with loadings over .4 which relate to a combination of the family, friends and generic factors in the full scale which relate to negatively worded items (See Table 8 for factor loadings and Appendix A: Tables A22-A25 for full analysis). As two factors are identified that are consistent with previous research, these two factors will be utilised in further analysis in this study. These factors will be social support (family) and social support (friends).

Table 8: ***Pattern Matrix from SPSS for PCA Oblimin rotation for SS-A Scales: 3 factors extracted***

	Factor			
	1	2	3	Family. Friends or Generic Scale
SS-A01	.321	-.424		Friends
SS-A02	.804		.131	Family
SS-A03	.135		.565	Generic (rev)
SS-A04	.829		.124	Family
SS-A05	.442	-.311	.119	Generic
SS-A06		-.676		Friends
SS-A07	.814			Family
SS-A08	.467	-.364		Generic
SS-A09	.789			Family
SS-A10	-.222	-.426	.473	Friends (rev)
SS-A11	.671			Family
SS-A12	.594	-.201		Generic
SS-A13		.139	.716	Family (rev)
SS-A14	.473	-.446	-.188	Generic
SS-A15		-.845		Friends
SS-A16		-.869		Friends
SS-A17	.200	-.667		Generic
SS-A18	.680	-.165		Family
SS-A19		-.887		Friends
SS-A20	.301	-.422		Generic
SS-A21		-.165	.638	Generic (rev)
SS-A22	.220		.686	Family (rev)
SS-A23		-.862		Friends

4.2.1.6 Locus of Control of Behaviour Scale (LCB)

The 17 items of the Locus of Control of Behaviour (LCB) Scale were subjected to principal components analysis (PCA) using SPSS. Prior to performing PCA the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of few coefficients of .3 and above although the Kaiser-Meyer-Oklin value was .795 exceeding the recommended value of .6 (Kaiser, 1970, 1974) and the

Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ($p<.001$) supporting the factorability of the correlation matrix.

Principal components analysis revealed the presence of four factors with eigenvalues exceeding 1, explaining 25.9%, 17.68%, 9.04%, 6.46% of the variance respectively. An inspection of the screeplot indicates a break after the second factor and so it was decided that two factors were retained for further investigation. To aid in the interpretation, an Oblimin rotation was performed on these two factors. The two factor solution explained a total of 43.05% of the variance. The interpretation of the two factors is consistent with previous research on the LCB Scale with all 10 external locus items loaded above .4 on factor 1 and all 7 internal locus items loaded above .4 on factor 2 (see Table 9 for factor loadings and Appendix A: Tables A29-A32 for full analysis). The scale was designed as a single scale with higher scoring for external locus of control (LOC) factors and reverse scoring for internal LOC factor and will therefore be utilised as a single scale as indicated by the scale authors and previous research (Craig, Franklin & Andrews, 1984).

Table 9: ***Pattern Matrix from SPSS for PCA Oblimin rotation for LCB Scale: 2 factors extracted***

	Factor		Internal / External
	1	2	
LC01		.657	Internal
LC02	.547		External
LC03	.614		External
LC04	.533		External
LC05		.674	Internal
LC06	.677		External
LC07		.502	Internal
LC08		.697	Internal
LC09	.573		External
LC10	.644		External
LC11	.634		External
LC12	.717		External
LC13		.644	Internal
LC14	.616		External
LC15		.532	Internal
LC16		.786	Internal
LC17	.736		External

4.2.1.7 Depression, Hopelessness and Suicide Screening Scale (DHS)

The 39 items of the Depression, Hopelessness and Suicide Risk Scale (DHS) were subjected to principal components analysis (PCA) using SPSS. Prior to performing PCA the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of .3 or above. The Kaiser-Meyer-Oklin value was .925 exceeding the recommended value of .6 (Kaiser, 1970, 1974) and the Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ($p<.001$) supporting the factorability of the correlation matrix.

Principal components analysis revealed the presence of three factors with all eigenvalues exceeding 1, confirmed by the results of Parallel analysis with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (39 variables x 223 respondents). An Oblimin rotation was performed on these three factors. The three factor solution explained a total of 44.83% of the variance. The interpretation of the three factors is somewhat consistent with previous research on the DHS scale, with 11 of the 12 suicide critical item scale items with loadings above .4 on factor 2. The loadings of greater than .4 on factors 1 and 3 were a mix of the items from the depression and hopelessness scales. (See Table 10 for factor loadings and Appendix A: Tables A26-28 for full analysis). Factor 1 was focussed on items linked to negative views of themselves. Factor 3 focussed on items linked to a positive view of their self, which were reverse scored. The DHS is a widely used measure within the Canadian prison service and has been developed on a prison population which has comparisons to the population to this study. In addition, studies have shown a clear link between the separate factors and suicide risk within an offending population. (Mills, Green & Reddon, 2005; Brown & Day, 2008; Mills & Kroner, 2005) Considered alongside the strength with which the suicide critical item scale has been identified in the current factor analysis, the DHS will be used as separate sub-scales within this study. The number of participants per variable was approximately 5, which is at the low end for this analysis. Although the communalities for this analysis were largely in the .5 or above range which according to MacCallum *et al*., (1999) would suggest that the sample size is reasonable, the suicide screening scale does not fully meet that criteria and some caution may be required in interpreting the factor structure.

Table 10: ***Pattern Matrix from SPSS for PCA Oblimin rotation for DHS Scales: 3 factors extracted***

	Factor			Depression (D), Hopelessness (H) or Suicide Critical Item Scale (SCI)
	1	2	3	
DHS02	.746			H
DHS07	.741			D
DHS26	.708			H
DHS19	.707			D
DHS33	.698			D
DHS18	.678			H
DHS30	.648			H
DHS03	.641			D
DHS35	.631			H
DHS01	.599			D
DHS23	.590			D
DHS21	.587			D
DHS10	.576			H
DHS06	.544			H
DHS11	.536			D
DHS27	.467			D
DHS13	.435			D
DHS15	.372			D
DHS29	.316			D
DHS34		.803		SCI
DHS28		.794		SCI
DHS32		.779		SCI
DHS36		.700		SCI
DHS20		.697		SCI
DHS24		.639		SCI
DHS16		.614		SCI
DHS39		.611		SCI
DHS12		.486		SCI
DHS38		.380		SCI
DHS08		.360		SCI
DHS22			.714	H
DHS09			.581	D
DHS25			.509	D
DHS14	.347		.492	H
DHS17			.485	D
DHS31	.368		.485	D
DHS37	.389		.416	H
DHS05	.365		.413	D
DHS04			.338	SCI

4.2.1.8 Perceived Stress Scale (PSS)

The 14 items of the Perceived Stress Scale were subjected to principal components analysis (PCA) using SPSS. Prior to performing PCA the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of .3 and above with the Kaiser-Meyer-Oklin value was .872 exceeding the recommended value of .6 (Kaiser, 1970, 1974) and the Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ($p<.001$) supporting the factorability of the correlation matrix.

Principal components analysis revealed the presence of two factors with eigenvalues exceeding 1, explaining 33.6% and 18.13% of the variance respectively. An inspection of the screeplot revealed a clear break after the second factor and this was supported by Parallel analysis which indicated two factors with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (14 variables x 250 respondents). To aid in the interpretation of these factors, oblimin rotation was performed. The rotated solution revealed that two factors were strongly loaded, accounting for 51.74% of the variance. The first factor had 8 out of 14 items loaded above .4 which seemed to relate to the effective coping and positive perception items (with reverse scoring) with the second factor having 7 items with loading above .4, all of which relate to negatively worded items (see Table 11 for factor loadings and Appendix A: Tables A33-A36 for analysis). This analysis indicates that a uni-factorial conclusion is the most reliable conclusion, with the first concept of coping with stress mitigating the score relating to the second concept of experiencing stress. This

conclusion is also in line with published research on the PSS scale (Cohen *et al*., 1983). The PSS Scale will be used as a single scale in analyses for this study.

Table 11 ***Pattern Matrix from SPSS for PCA Oblimin rotation for PSS Scale: 2 factors extracted***

	Factor	
	1	2
PSS01		.704
PSS02		.688
PSS03		.761
PSS04	.759	
PSS05	.733	
PSS06	.706	
PSS07	.678	
PSS08		.645
PSS09	.623	
PSS10	.651	
PSS11		.741
PSS12	-.522	.409
PSS13	.702	
PSS14		.723

4.2.2 Analysis of Normality

An analysis of the normality of the distribution of scores for each measure was undertaken. All of the measures were significant on the Kolmogorov-Smimov test of normality, suggesting that the measures violate the assumption of normality, though this is common in larger samples and the normality assumption may not be relevant within this sample for some tests (e.g. T-test and MANOVA) (Allison, 1999; Pallant, 2007). In addition, the skewness and kurtosis estimate was divided by its standard error to calculate a z test of the null hypothesis that the parameter is zero. The z scores of skewness and kurtosis were compared with values expected from chance alone. Due to the large sample, values below 3.29 with a significance level of $p<.001$ were chosen

to ensure random significance was limited. Only the Resilience Scale had skewness and kurtosis z scores above 3.29 indicating that the assumption of normality has been met to an acceptable standard for parametric tests for the remaining scales (see Appendix C: Table C1 for full results). Further consideration was given to the assumption of normality. On inspection of the histograms and P-P plots for the assessment tools, many of the measures (CRI, Defeat Scale, Resilience Scale, LCB, Social Support Scale family and friends sub-scale, Depression Scale and PSS) appear to be reasonably normally distributed. The exceptions include total entrapment and the DHS scale sub-factor Hopelessness and suicide critical item scale. (See Appendix B: Figures B1 –B36 for histograms and P-P plots for all measures and sub-scales). Between the skewness and kurtosis z-scores and histograms and P-plots, all scales are approximately normal and do not violate the assumption of normality.

4.3 COMPARISON OF STUDY MEAURES WITH PUBLISHED NORMS

A one-sample t-test was conducted on SPSS (version 17.0) to compare the study means and standard deviations of the scales and sub-scales in their original form (i.e. not the factor structure which emerged from the current sample) with published norms for the measures (see Table 12 for normative means used). The samples from whom normative data is available are mostly population based rather than prison or offender based. There were significant differences found for all but one comparison, the comparison of the Resilience Scale with depressed patients (see Table 12 for full results).

The mean for the Resilience scale (M = 129.8, SD = 26.27) was less than the general population value of 148.3. A one-sample t-test showed that the value was significant: t (249) = -11.145; p<.001 (two-tailed). The mean for the Resilience Scale (M = 129.8, SD = 26.27) was slightly less than the depressed population value of 130. A one-sample t-test showed that the value was not significant: t (249) = -.132; p = .895 (two-tailed).

The mean for the Entrapment Scale total score (M = 23.96, SD = 16.17) was greater than the general population value of 7.95. A one-sample t-test showed that the value was significant: t (248) = 15.65-; p<.001 (two-tailed). The mean for the external entrapment sub-scale (M = 15.25, SD = 9.71) was greater than the student population value of 10.1. A one-sample t-test showed that the value was significant: t (248) = 8.371; p<.001 (two-tailed). However, the mean for the external entrapment sub-scale was less than the depressed patient population value of 25.2. A one-sample t-test showed that the value was significant: t (248) = -16.178; p<.001 (two-tailed). The mean for the internal entrapment sub-scale (M = 8.81, SD = 7.52) was greater than the student population value of 4.6. A one-sample t-test showed that the value was significant: t (251) = 8.884; p<.001 (two-tailed). However, the mean for the internal entrapment sub-scale was less than the depressed patient population value of 18.6. A one-sample t-test showed that the value was significant: t (251) = -20.673 p<.001 (two-tailed).

The mean for the Defeat Scale (M = 24.77, SD = 14.02) was greater than the student population value of 17.2. A one-sample t-test showed that the value was significant: t (249) = 8.538; p<.001 (two-tailed). However, the mean for the Defeat scale was less than the depressed patient population value of 47.2. A one-sample t-test showed that the value was significant: t (249) = -25.31 p<.001 (two-tailed).

The mean for the Perceived Stress Scale (M = 42.36, SD = 9.415) was greater than the male community population value of 24. A one-sample t-test showed that the value was significant: t (233) = 29.834; p<.001 (two-tailed).

The mean for the Coping Responses Inventory (CRI):LA scale (M = 9.31, SD = 4.14) was greater than the male category C prisoner population value of 8.48. A one-sample t-test showed that the value was significant: t (212) = 2.94; p = .004 (two-tailed). The mean for the CRI:PR scale (M = 10.11, SD = 4.21) was greater than the male category C prisoner population value of 8.5. A one-sample t-test showed that the value was significant: t (215) = 5.62; p<.001 (two-tailed). The mean for the CRI:SG scale (M = 8.71, SD = 4.23) was greater than the male category C prisoner population value of 7.36. A one-sample t-test showed that the value was significant: t (216) = 24.715; p <.001 (two-tailed). The mean for the CRI:PS scale (M = 10.47, SD = 4.22) was greater than the male category C prisoner population value of 9.56. A one-sample t-test showed that the value was significant: t (212) = 3.143; p = .002 (two-tailed). The mean for the CRI:CA scale (M = 9.22, SD = 4.19) was greater than the male category C prisoner population

value of 8.29. A one-sample t-test showed that the value was significant: t (213) = 3.25; p = .001 (two-tailed). The mean for the CRI:AR scale (M = 8.95, SD = 4.17) was greater than the male category C prisoner population value of 8.27 A one-sample t-test showed that the value was significant: t (215) = 2.39; p = .018 (two-tailed). The mean for the CRI:SR scale (M = 8.18, SD = 4.02) was greater than the male category C prisoner population value of 6.56. A one-sample t-test showed that the value was significant: t (210) = 5.86; p <.001 (two-tailed). The mean for the CRI:ED scale (M = 7.1, SD = 4.09) was greater than the male category C prisoner population value of 5.58. A one-sample t-test showed that the value was significant: t (213) = 5.44; p<.001 (two-tailed).

The mean for the total score on the Social Support Appraisal Scale (M = 47.46, SD = 13.12) was less than the US adult psychiatric patient population value of 66. A one-sample t-test showed that the value was significant: t (216) = -20.82; p<.001 (two-tailed). The mean for the score on the Social Support Appraisal (Family) scale (M = 15.82, SD = 5.53) was less than the US adult psychiatric patient population value of 22. A one-sample t-test showed that the value was significant: t (218) = -16.55; p<.001 (two-tailed). The mean for the Social Support Appraisal (Friends) scale (M = 14.71, SD = 4.84) was less than the US adult psychiatric patient population value of 20. A one-sample t-test showed that the value was significant: t (222) = -16.33; p<.001 (two-tailed).

The mean for the Total DHS scale (M = 13.97, SD = 10.18) was greater than the Canadian prison population value of 3.4. A one-sample t-test showed that the value was significant: t (217) = 15.33; p<.001 (two-tailed). The mean for the DHS depression

scale (M = 7.71, SD = 4.87) was greater than the Canadian prison population value of 2.6. A one-sample t-test showed that the value was significant: t (223) = 15.73; p<.001 (two-tailed). The mean for the DHS hopelessness scale (M = 3.97, SD = 3.27) was greater than the Canadian prison population value of .5. A one-sample t-test showed that the value was significant: t (222) = 15.86; p<.001 (two-tailed).

The mean for the Locus of Control of Behaviour Scale (M = 33.67, SD = 13.4) was greater than the student population value of 28.3. A one-sample t-test showed that the value was significant: t (213) = 5.85; p<.001 (two-tailed).

4.3.1 Summary of comparison with normative data

The scores on measures indicate that in comparison to normative samples: the current study population has a lower level of resilience than the general population but similar level in comparison to depressed patients; less perceived social support than a psychiatric population; greater levels, in comparison with students, of all measures of entrapment and defeat although a significantly lower level of these aspects in comparison with a depressed patient sample; a greater external locus of control than a student population; greater level of perceived stress than a community population; greater use of all coping strategies than prisoners in a Category C prison; and greater self-reported levels of depression, hopelessness and suicide critical items than a Canadian prison sample. Most of the published normative data for the measures was

developed with both male and female participants. The exceptions are the PSS and CRI scales where comparison is made with a male sample.

Table 12: Means, Standard Deviations (SD), degrees of freedom (d.f.) and significance level for all measures and normative results.

Measure	**Sub-scale**	**Mean (current study)**	**SD (current study)**	**Mean (published norms)**	**SD (published norms)**	**Population for comparative mean/SD**	d.f. (current study)	Sig (2-tailed)
Resilience Scale-25	n/a	129.78	26.27	148.3	16.9	Random sample in US (Wagnild, 2009)	249	<.001
				130	30.7	Depressed patients (Wagnild, 2009)	249	.895
Entrapment Scale	***Total***	23.96	16.17	7.95	10.59	Control group (Rasmussen *et al*., 2009)	248	<.001
	External entrapment	15.25	9.71	10.1	8	Students (Gilbert & Allan, 1998)	248	<.001
				25.2	9.5	Depressed patients(“)	248	<.001
	Internal entrapment	8.81	7.52	4.6	6	Students (Gilbert & Allan, 1998)	251	<.001
				18.6	5.6	Depressed patients (“)	251	<.001
Defeat Scale	***n/a***	24.77	14.02	17.2	10.8	Students(Gilbert & Allan, 1998)	249	<.001
				47.2	10.9	Depressed patient (“)	249	<.001
Perceived Stress Scale	***n/a***	42.36	9.42	24	7.8	Male community sample (Cohen *et al*., 1983)	233	<.001
CRI: Approach	***LA***	9.31	4.14	8.48	4.21	Male prisoners Cat C -UK (Slade & Gilchrist, 2005)	212	.004
	PR	10.11	4.21	8.5	4.58	“	215	<.001
	SG	8.71	4.23	7.36	4.04	“	216	<.001
	PS	10.47	4.22	9.56	4.63	“	212	.002
CRI : Avoidance	***CA***	9.22	4.19	8.29	4.83	“	213	.001
	AR	8.95	4.17	8.27	4.83	“	215	.018
	SR	8.18	4.02	6.56	4.32	“	210	<.001
	ED	7.1	4.09	5.58	4.40	“	213	<.001
Social Support Appraisal	***Total***	47.46	13.12	66	12.7	Adult psychiatric population (US) O’Reilly (1995)	216	<.001
	Family	15.82	5.53	22	5.6	“	218	<.001
	Friends	14.71	4.84	20	4.9	“	222	<.001
Depression, hopelessness and suicide screening scale	***Total***	13.97	10.18	3.4	4.4	Prison sample at time of entry into prison (Canada)(Mills & Kroner, 2005)	217	<.001
	Depression	7.71	4.87	2.6	3.5	“	223	<.001
	Hopelessness	3.97	3.27	0.5	1.2	“	222	<.001
	Suicide critical item	2.31	3.12			No normative values published	222	n/a
Locus of Control of Behaviour		33.67	13.41	28.3	8.5	Students (Craig, Franklin & Andrews, 1984)	213	<.001

4.4 COMPARISON OF RESPONDENTS REPORTING PREVIOUS SELF-HARM WITH RESPONDENTS REPORTING NO PREVIOUS SELF-HARM

As described in sections 1.2.2 and 1.3.2, previous self-harm has been identified as a key predictor of future self-harm and suicide (Fliege *et al*., 2009; Foster, *et al*., 1997). In order to add to knowledge as to whether the cry of pain model is relevant in distinguishing the groups, a comparison was undertaken to evaluate which measures distinguish those participants who reported previous self-harm from those who do not report previous self-harm.

186 participants reported no previous self-harm and 64 participants reported previous self-harm. However, only 181 respondents were included in the analysis, with 52 respondents in the previous self-harm (PSH) group and 125 in the non-previous self-harm (NPSH) group. Those excluded were due to respondents not fully completing all questionnaires. Preliminary assumption testing was conducted to check for outliers, linearity and homogeneity of variance. No major violations were noted. Levene's test of equality of error variance found that for all measures the variances were equal between the previous self-harm and no previous self-harm groups and did not violate the assumption of equality of variance. A further assessment of homogeneity of variance was considered by considering Box's M test of Equality of Covariance (see Appendix C for full analysis). This was non-significant at the .001 level so the assumption of homogeneity was not violated (Pallant, 2007).

Discriminant Function analysis was undertaken to identify the combination of variables that most accurately differentiated prisoners who reported previous self-harm from those who did not. A check on multicollinearity was undertaken reviewing the correlations between variables. Those with significant correlation (>.8) would be considered for removal from the following analysis (correlation at Table D3). No additional factors were identified, however, the DHS-suicide critical item (SCI) scale was excluded from this analysis as a major aspect of this scale is previous self-harm and as such could not be considered to be independent.

For the discriminant function analysis only continuous variables are suitable and therefore the variable Convicted status (remand or convicted) were excluded from the analysis. In addition, since the date of the previous self-harm was not known, the variables age and times in prison would not be valid for use in this analysis and were excluded. The 17 variables retained for further analysis were the Resilience Scale, Total entrapment, Defeat Scale, Perceived Stress Scale, all CRI scales, Social Support Appraisal Scale (family and friend), DHS- Depression, DHS-Hopelessness and Locus of Control of Behaviour Scale.

As Tabachnick and Fidell (2007) explain, a minimum of five participants per variable is necessary in order for predictive analyses to be sufficiently powerful statistically. For this reason, given the relatively small size of the sample to the number of potential variables, a MANOVA were first computed to examine differences between the group of respondents reporting previous self-harm and the group not reporting previous self-harm with respect to the continuous variables in the study.

Only variables with significant difference between the groups were retained.

Table 13 shows the tests of equality of group means which identified 10 measures as differing significantly between the previous self-harm group and the no previous self-harm group. Those who reported previous self-harm reported higher entrapment (F = 37.95, p <.001), higher defeat (F = 22.582, p<.001), higher perceived stress (F = 37.158, p < .001), greater use of coping response:AR (F = 7.82, p = .006), greater use of coping response:ED (F = 19.86, p<.001), poorer social support (family) (F = 12.5, p<.001), poorer social support (friends) (F =14, p<.001), higher level of depression (F = 941.15, p<.001), higher level of hopelessness (F = 371.72, p<.001), increased external locus of control (F = 21.99, p<.001).

Table 13: ***Test of equality of group means comparing previous self-harm group with no previous self-harm group.***

Dependent Variable (Scale)	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Resilience	2306.651	1	2306.651	3.367	.068	.019
Entrapment	8185.283	1	8185.283	37.955	.000	.179
Defeat	3983.712	1	3983.712	22.582	.000	.115
Perceived stress	2937.652	1	2937.652	37.158	.000	.176
CRI: LA	5.526	1	5.526	.323	.571	.002
CRI: PR	7.979	1	7.979	.477	.491	.003
CRI: SG	2.127	1	2.127	.118	.732	.001
CRI: PS	32.752	1	32.752	1.914	.168	.011
CRI: CA	61.370	1	61.370	3.383	.068	.019
CRI: AR	132.765	1	132.765	7.818	.006	.043
CRI: SR	8.743	1	8.743	.569	.452	.003
CRI: ED	291.504	1	291.504	19.860	.000	.102
SS-A family	370.582	1	370.582	12.498	.001	.067
SS-A friend	305.464	1	305.464	13.999	.000	.074
DHS depression	941.153	1	941.153	54.502	.000	.239
DHS -hopelessness	371.724	1	371.724	43.535	.000	.200
LCB	3405.279	1	3405.279	21.995	.000	.112

A discriminant function analysis was then undertaken using the 10 significant measures identified above. The analysis determined one function explaining 100% of the variance, (canonical R^2 = .285) which statistically differentiated the groups (Λ= 0.715, x^2 (10) = 59.036, p < .001). The discriminant function significantly differentiated the individuals who report previous self-harm (*M* = 0.970) from those individuals who did not report previous self-harm (*M* = -0 .406). The standardized discriminant function coefficients for the significant measures in the function were in order of the strength by which the dependant variable contributes to the variable is as follows: (a) DHS-Depression (=0.470) (b) Total Entrapment (=0.330), (c) Defeat (= -0.275), (d) DHS-Hopelessness (= 0.273) (e) Perceived Stress (= 0.235), (f) CRI:ED (= 0.225), (g) Social Support Friends (= 0.180), (h) Locus of Control (= -0.156, (i) CRI:AR (= -0.050) and (j) Social Support Family (= 0.009). The correlations between outcomes and the discriminant functions revealed that DHS-depression (=.888), DHS-hopelessness (= .778), total entrapment (= .741) and perceived stress (= .708) loaded very highly on the function (over .7) in a positive direction (details in Tables 14 and 15).

The classification analysis using all the variables showed that 77.8% of previous self-harmers and 75.2% of non previous self-harmers were correctly classified using these predictors. Altogether, 76% of the participants were correctly classified.

Table 14: ***Discriminant Function Analysis Standardized Canonical Discriminant Function Coefficient***

Variable	Function 1
Entrapment	.330
Defeat	-.275
Perceived stress	.235
CRI: AR	-.050
CRI: ED	.225
SS-A family	.009
SS-A friend	.180
DHS Depression	.470
DHS hopelessness	.273
LCB	-.156

T able 15: ***Discriminant Function Analysis: Structure Matrix***

Variable	Function 1
DHS-Depression	.888
DHS-hopelessness	.778
Entrapment	.741
Perceived stress	.708
LCB	.559
Defeat	.539
CRI: ED	.530
SS-A friend	.488
SS-A family	.420
CRI: AR	.313

These weights and loadings both suggest that the best predictors, in order of importance, for distinguishing those individuals who self-harmed prior to questionnaire completion from those who had not previously self-harmed are: higher level of self-reported feelings of depression and hopelessness, greater feelings of entrapment and higher perceived stress. Also contributing in a positive direction but to a lesser extent on the variance of outcome was greater use of the coping strategy emotional discharge and poorer social support from family and

friends. A negative contribution was provided by lower feelings of defeat, internal locus of control and decrease in the coping strategy: acceptance and resignation.

4.5 PREDICTION OF SUICIDE CRITICAL RISK

Due to the robustness of the test and sample size, Hierarchical Multiple Regression was undertaken to examine predictors of suicide critical risk as measured through the total score on the DHS suicide critical item scale (dependent variable).

The measures retained after the Principal Components Analysis detailed in section 4.2.1 above were included in the analysis (Resilience Scale, Entrapment Scale, Defeat Scale, CRI, PSS, SS-A (family and friends), DHS -depression and hopelessness scales and LCB). Three demographic factors (age, conviction status and times in prison) were controlled for in the analysis to test the predictive value of dynamic factors which research has linked with self-harm. A check on multicollinearity was undertaken reviewing the correlations between variables. Those with significant correlation (>.9) or VIF above 10 or Tolerance below 0.1 were removed from the regression (see Table 16 and D3). No additional factors were removed. Further preliminary analysis was undertaken between measures to ensure no violation of the assumptions of normality, linearity, homoscedasticity and outliers. No major violations were identified.

Hierarchical multiple regression was used to assess the ability of the 20 measures to predict the level of suicide risk (Suicide Critical Item scale on DHS), after controlling for static and demographic factors. Age, times in prison and conviction status (remand versus convicted) were entered at Step 1, explaining 7.4%, of the variance in suicide risk, $F (3, 194) = 5.194$, $p = .002$. After entry of the 17 dynamic variables (resilience, entrapment, defeat, eight coping strategies, perceived stress, perceived social support (family and friends), self-reported feelings of depression, hopelessness, and locus of control) at Step 2 the total variance explained by the model as a whole was 43.5% , $F (20, 177) = 8.59$, $p<.001$. The 17 dynamic factors explained an additional 41.8% of the variance in suicide risk, after controlling for static factors, R squared change = .418, F change $(17, 177) = 8.58$, $p<.001$.

In the final model only three measures were statistically significant (details in Table 16), with DHS-depression recording the highest beta value (beta= 0.383, $p = .001$), followed by the SS-A social support (family) (beta = 0.168, $p = .019$) and the number of times in prison (beta = 0.121, $p = .04$). The model predictive of suicide risk included greater feelings of depression, lower level of perceived social support from family and greater number of times in prison.

Table 16: ***Hierarchical Regression for Measures on Suicide Critical Risk***

Coefficients											
		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1.893	.779		2.430	.016					
	Age	-.005	.021	-.018	-.251	.802	.015	-.018	-.017	.973	1.028
	Times in prison	.205	.053	.271	3.883	.000	.270	.269	.268	.980	1.020
	Conviction status	.220	.431	.035	.511	.610	.045	.037	.035	.990	1.010
2	(Constant)	-1.634	1.849		-.884	.378					
	Age	-.006	.018	-.021	-.358	.721	.015	-.027	-.019	.848	1.179
	Times in prison	.092	.044	.121	2.064	.040	.270	.153	.111	.828	1.207
	Conviction status	.234	.350	.038	.670	.504	.045	.050	.036	.905	1.105
	Resilience Scale	-.001	.007	-.012	-.188	.851	-.273	-.014	-.010	.729	1.372
	Entrapment Scale	-.002	.018	-.011	-.125	.901	.494	-.009	-.007	.342	2.925
	Defeat Scale	-.021	.021	-.095	-.996	.321	.481	-.075	-.053	.315	3.173
	Perceived stress Scale	.025	.028	.076	.906	.366	.489	.068	.048	.407	2.454
	CRI: LA	-.047	.064	-.063	-.735	.463	-.069	-.055	-.039	.389	2.571
	CRI: PR	-.044	.064	-.060	-.695	.488	-.153	-.052	-.037	.382	2.620
	CRI: SG	.059	.056	.080	1.046	.297	-.089	.078	.056	.492	2.033
	CRI: PS	-.116	.068	-.157	-1.715	.088	-.249	-.128	-.092	.340	2.938
	CRI: CA	-.043	.057	-.058	-.751	.454	.223	-.056	-.040	.485	2.061
	CRI: AR	.078	.057	.105	1.375	.171	.269	.103	.074	.494	2.024
	CRI: SR	.037	.058	.048	.638	.524	-.140	.048	.034	.510	1.961
	CRI: ED	.042	.056	.056	.756	.451	.325	.057	.040	.526	1.901
	SS-A(family)	.094	.040	.168	2.373	.019	.414	.176	.127	.574	1.741
	SS-A (friend)	.000	.045	.001	.009	.993	.376	.001	.000	.587	1.703
	LCB	.013	.019	.055	.655	.514	.504	.049	.035	.408	2.448
	DHS-Depression	.245	.073	.383	3.336	.001	.628	.243	.179	.217	4.605
	DHS-hopelessness	.098	.106	.103	.924	.357	.569	.069	.049	.229	4.361

a. Dependent Variable: suicide critical item

4.6 PREDICTION OF SELF-HARM IN PRISON

The means and standard deviation for all measures completed by all 270 participants are detailed in Table 12 (p xxx). A number of participants in the no self-harm in prison group did not complete all the measures. All respondents in the self-harm in prison group completed all the measures. 177 participants were included in the analysis of future engagement in self-harm in prison with participants excluded if they had not fully completed all questionnaires. 18 respondents had self-harmed within prison since completion of the baseline measures. 159 respondents had not self-harmed during their time in prison since completion of the baseline measures.

Preliminary analysis was undertaken between measures to ensure no violation of the assumptions of multicollinearity and linearity. Those with significant correlations (>.9) or VIF above 10 or Tolerance below 0.1 were removed from the regression (see Tables D3 and E2). No additional factors were removed. The results of the analysis of the linearity of the logit identified two measures that violated the assumption of linearity of the logit, the suicide critical item scale (SCI) and Locus of Control of Behaviour Scale (LCB) (Table E1). When the assumption of linearity in the logits is violated, then logistic regression will underestimate the degree of relationship of the independent variable to the dependent variable and will lack power (generating Type II errors, thinking there is no relationship when there actually is). In the logistic regression in this study, suicide critical items and LCB

Scale were significant and as such, no further adaptation was required to increase the power of the variable.

Direct logistic regression was performed to assess the impact of a number of factors on the likelihood that respondents would self-harm whilst in prison. The final model contained the dependant variable as self-harm while in prison after completion of the baseline measures. Twenty independent variables were contained in the model (Age, times in prison, Resilience Scale, Entrapment Scale, Defeat Scale, Perceived Stress Scale, CRI (eight coping strategies), DHS (depression, hopelessness, and suicide critical risk scale), SS-A (family and friends) and Locus of Control of Behaviour Scale). The conviction status was not included in the analysis as this variable would change over the follow-up period. The full model containing all the predictors was statistically significant, X^2 (20, N= 167) = 82.91 p<.001, indicating that the model was able to distinguish between respondents who self-harmed in prison and those who did not self-harm in prison. The model as a whole explained between 39.1% (Cox and Snell R squared) and 79% (Nagelkerke R squared) of variance in self-harm status. Overall, 96.4% of cases were correctly classified with 77.8% of respondents in the self-harm in prison group and 98.7% of respondents in the no self-harm in prison groups being correctly classified (full analysis in Appendix E).

Table 17: ***Logistic Regression predicting the likelihood of future engagement in self-harm in prison***

							95% C.I.for EXP(B)	
Variables	**B**	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**	**Lower**	**Upper**
Age	.022	.072	.095	1	.758	1.022	.888	1.178
Times in prison	-.067	.152	.193	1	.661	.935	.694	1.260
Resilience Scale	.072	.047	2.409	1	.121	1.075	.981	1.177
Entrapment	-.250	.100	6.321	1	.012	.778	.640	.946
Defeat	.223	.097	5.267	1	.022	1.250	1.033	1.513
PSS	.457	.224	4.181	1	.041	1.580	1.019	2.449
CRI:LA	.230	.288	.638	1	.425	1.259	.716	2.214
CRI:PR	.312	.225	1.919	1	.166	1.365	.879	2.122
CRI:SG	-.446	.230	3.743	1	.053	.640	.408	1.006
CRI:PS	.330	.365	.815	1	.367	1.390	.680	2.844
CRI:CA	-.589	.295	3.993	1	.046	.555	.311	.989
CRI:AR	-.035	.216	.027	1	.871	.965	.633	1.474
CRI:SR	-.176	.221	.638	1	.425	.838	.544	1.292
CRI:ED	.204	.256	.637	1	.425	1.226	.743	2.024
SS-A (family)	-.450	.232	3.767	1	.052	.638	.405	1.004
SS-A (friend)	.609	.296	4.222	1	.040	1.839	1.029	3.288
LCB	.383	.165	5.381	1	.020	1.466	1.061	2.026
DHS suicide critical item	1.726	.635	7.400	1	.007	5.619	1.620	19.488
DHS depression	-1.55	.789	3.863	1	.049	.212	.045	.996
DHS hopelessness	-.393	.613	.411	1	.521	.675	.203	2.243

As shown in Table 17, eight of the independent variables made a unique statistically significant contribution to the model, Entrapment Scale (p = .012), Defeat Scale (p = .022), Perceived Stress Scale (p = .041), CRI: CA (p = .046), SS-A (Friends) (p = .040), DHS depression (p = .049), LCB scale (p = .020) and suicide critical item scale (p = .007). The strongest predictor was the suicide critical item (SCI) scale, recording an odds ratio of 5.619. This indicated that respondents who reported previous self-harm and current thoughts and permissions were over 5 times more likely to self-harm in prison, controlling for all other factors. Four other significant variables had an odds ratio above 1 point: SS-A (friends) Scale recorded an odds ratio of 1.839;

Perceived Stress Scale recorded an odds ratio of 1.58; LCB Scale recorded an odds ratio of 1.466; Defeat Scale recorded an odds ratio of 1.25. These indicate that for every point on the scale, respondents were more likely to self-harm by the ratio listed. Three factors had an odds ratio less than 1: Total Entrapment recorded an odds ratio of 0.778; DHS depression recorded an odds ratio of 0.212; and CRI: CA recorded an odds ratio of 0.555. The odds ratio if less than 1 indicates that for every additional point on these measures, they were less likely to self-harm by the listed ratio.

The model predictive of self-harm in prison is linked most strongly to the elements of the suicide critical item scale followed by lower level of self-reported feelings of depression, poorer social support by friends, lower use of cognitive avoidance as coping strategy, high perceived stress, greater external locus of control and slightly lower feelings of entrapment and higher feelings of defeat.

CHAPTER 5: DISCUSSION

5.1 INTRODUCTION

Self-harm and suicide are prevalent within a prison population with suicide rates of up to 7.5 times that of the community and self-harm levels up to 40 times the community rate (Jenkins *et al*., 2005; Ministry of Justice, 2010). A number of static factors have previously been identified within this population which aid identification of those at risk. However, due to difficulties with specificity, as many prisoners present with one or more risk factors, there remains a need to identify the dynamic, proximal and protective factors which will aid prediction and intervention with this vulnerable group (Fawcett, 2001; Rudd, 2003).

To begin to consider how these factors interlink, a theoretical model is important. This theory should be well-defined, empirically testable and to consider the mechanism of self-harm and suicide; explain this behaviour in general and specifically within this high-risk group. Until recently, attempts at understanding suicidal and self-harming behaviour have largely been atheoretical. As a result, while potential risk factors are identified, this is in the absence of a clear understanding of an underlying rationale or explanatory framework for why certain factors (such as mental health or substance misuse) create a risk in some but not in others.

This study is the first to hypothesise that the process of both self-harm and suicide in prison can be explained by the cry of pain model (Williams & Pollock, 2001); with the four factors of the model able to identify those who are at risk of suicide or engage in self-harm. The cry of pain model has had initial testing for suicide risk (O'Connor, 2003) and there has also been support for the role for the cry of pain model process within self-harm (Rasmussen *et al*., 2009; Scoliers, *et al*., 2009).

Many previous prison research findings are retrospective in nature or consider the predictive ability of measures on a single existing risk factor for suicide or self-harm (e.g. suicide ideation). In order to continue to add to this knowledge base, three analyses were completed. Firstly, to examine psychological factors which might distinguish those who disclosed previous self-harm from those who did not; secondly, to examine psychological factors which might distinguish those who were identified as high current suicide risk through the suicide critical item measure (measuring suicide ideation, previous harm and cognitive permission for suicide) compared to lower scores. Finally, a prospective study was undertaken to examine psychological factors which might predict future engagement in self-harm, from baseline measures completed on the first days in custody compared to those who did not engage in self-harm.

Specifically it was hypothesised that, in line with the cry of pain model, those at greatest risk of suicide; those who had engaged in self-harm prior to the study; and

those who self-harmed within prison would have the following in comparison to controls.

- **Presence of stressors:** higher scores for the perception of perceived stress;
- **Presence of defeat**: scores indicating higher levels of the perceptions of defeat;
- **Perception of entrapment**: higher scores for entrapment, lower scores for approach coping strategies and higher scores for avoidant coping strategies, lower scores for resilience and hopelessness and an external locus of control;
- **Perceived absence of rescue factors**: lower perceived level of social support.

Certain demographic and clinical measures which have been shown through previous research to have relevance with the prediction of self-harm and suicide were also considered. It was hypothesised that those who engaged in self-harm prior to the study; were at greatest risk of suicide; and those who self-harmed within prison would have the following in comparison to controls: younger age; increased self-reported feelings of depression; increased number of times in prison and remand status (compared to sentenced status); plus suicide risk (for prospective self-harm study).

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Many of the measures utilised in the study had not previously been used with a UK prison population. Significant differences were demonstrated between a UK Local prison population and normative samples in all but one reported instance. The results provide support for a picture of greater vulnerability in this population in comparison to community samples.

The three analyses undertaken as outlined in the hypotheses revealed the following results. The hypotheses were supported to some degree for all three analyses; with the model strongly supported for the risk of engagement in self-harm in prison. For the first analysis (discriminant function analysis) the most relevant measures for distinguishing those individuals who self-harmed prior to the study from those who had not previously self-harmed were: reported higher levels of depression and hopelessness; greater feelings of entrapment; and higher perceived stress. In addition, the model included lower levels of feelings of defeat; greater use of the avoidant coping strategy: emotional discharge (ED); internal locus of control; less use of avoidant coping strategy acceptance or resignation (AR); and poor perceived social support from family and friends. 76% of prior self-harming prisoners could be correctly classified with this model.

For the second analysis, a multiple regression was completed. The significant predictors identified for current suicide risk were low level of perceived social support from family, higher scores on a measure of depression and a greater

number of times in prison, with 43.5% of the variance explained by this model. Other factors were not found to add significantly to the predictive utility of the model.

Finally, a logistic regression model showed excellent predictive ability for engagement in self-harm in prison correctly classifying 96.4% of all cases and 77.8% of those who went on to self-harm. This model was most strongly linked to the suicide critical item (SCI) scale followed by lower level of feelings of depression, poorer social support by friends, less use of the avoidant coping strategy: cognitive avoidance (CA), higher perceived stress, greater external locus of control, slightly lower feelings of entrapment and higher feelings of defeat.

The findings overall support the hypotheses that the cry of pain model has utility in predicting self-harm within a prison population, with the findings providing strong support that the four key elements predict engagement in self-harm within prison. There is mixed support for its link with suicide risk although there is evidence of the presence of some key aspects. To follow, it is suggested in section 5.5 that the measure for suicide risk utilised in this study may not be sufficiently robust for the model to be fully tested. The model is somewhat supported in identifying participants who had previously self-harmed but the retrospective nature of the analysis may not identify all dynamic risks (discussed in section 5.4). The support

for the model in the prospective analysis confirms the need to continue to measure and assess risk on an ongoing basis (full discussion in section 5.6).

5.2 FACTOR ANALYSIS

All measures utilised within the study were subjected to Principal Components Analysis (PCA) to consider the factor structure of the scales with the current sample (see section 4.2.1). The measures determined to be used as a single factor, in keeping with previous research, were the Resilience Scale, Perceived Stress Scale (PSS), Locus of Control of Behaviour Scale (LCB) Scale and Defeat Scale. The Social Support Appraisal (SS-A) scale was most appropriate to be used as two main sub-factors (family and friends) as is reported in published research. Those scales whose structure was not in keeping with the published structure were the Entrapment Scale, the CRI approach and avoidant subscales and the DHS scales.

The Entrapment Scale is usually published as a two-factor structure (internal and external entrapment) although it has also been used as a single scale. The current study revealed a uni-factorial result with a single 'entrapment' structure. This single factor was used in the analysis within the current study. Further analysis conducted within the study raises the possibility of the presence of two factors of the entrapment concept although not within the Entrapment Scale questionnaire. This is discussed in Section 5.7.3.

The published structure for the CRI reports two overarching factors (approach and avoidant coping) each separated into four sub-factors. The PCA also identified two overarching factors and four similar sub-factors for the avoidant coping subscale. However, the published four factor model for approach coping was not supported. The conclusion reached for this study is, due to a strong previous research base and some support from the PCA in this study, that the CRI would be utilised as per its published factors structure.

The DHS scale PCA supported a three factor structure. However, the only factor similar to the published factors was the suicide critical item (SCI) factor, with the other two factors showing a mix of DHS-depression and DHS-hopelessness scale items. As the DHS is widely used within a Canadian prison population and the research support for the separate factors, along with the strength of support for the SCI factor, the DHS was used as three separate sub-scales within this study.

The factor analysis for all measures within this study supports the use of most measures within a remand and local prison population with all measures used in a manner consistent with previous research. Strong support was given for the use of the Resilience, LCB, PSS, Defeat and SS-A Scales with the study population. The analysis suggests that the use of the Entrapment, CRI and DHS scales may require some consideration within this population. It is likely that the constraints of a prison environment may affect the factor structure with some items being redundant and others present at high levels (e.g. aspects of entrapment or availability of some coping strategies). It is noted that the DHS scale items are

endorsed at a much greater level than within the Canadian population from which the scale was developed. The depression and hopelessness items on the scale may therefore require some further adaption to confirm these key concepts and most effective measurement within a British remand population. An evaluation of the measures is discussed further in section 5.10.

5.3 COMPARISON WITH PUBLISHED NORMATIVE DATA

The majority of measures used in the study have not previously been utilised within a UK prison population and the aim of this section is to consider the utility of those measures within this population. The study demonstrated that there are significant differences between a UK Local prison population and normative samples in all but one reported instance. Most of the normative samples were from a mix of male and female participants; the exceptions being the PSS and CRI scales where a male sample was available for comparison.

One sample t-tests were performed comparing all measures against published normative populations. The comparative populations were not consistent across the measures and the comparative sample used is detailed for each measure (details in Table 12).

Prisoners in the early stage of imprisonment reported higher levels of feelings of entrapment, defeat, perceived stress and greater external locus of control than a community sample though lower defeat, internal and external entrapment than a depressed patient sample. The sample also reported higher levels of depression,

hopelessness and suicide risk than a Canadian sentenced prison sample and better social support than a psychiatric inpatient sample. In addition, the sample demonstrated increased use of all coping strategies compared to a Category C sentenced prisoner population. The level of resilience for prisoners was similar to those reported for depressed patients although significantly lower than a community sample.

This population is therefore significantly more vulnerable than a general community sample, with measures highlighting a population with heightened negative emotional experience. These significant differences are important to consider in light of the general risk level for this population. Prisoners have repeatedly been identified as having far greater risk of suicide and self-harm due to the greater presence of certain demographic and psychological factors. For example, over 65% of prisoners have one or more personality disorder and up to 18% have a major mental illness such as major depression or schizophrenia (Fazel & Danesh, 2002; Jenkins *et al*., 2005; Lohner & Konrad, 2007). The findings support previous research that the prison population is generally more vulnerable than other populations and suggest that this population is at risk on many previous and current identified measures of suicide and self-harm risk. This newly imprisoned population feels more trapped, defeated, stressed and has less resilience than a community sample with greater feelings of depression and hopelessness exhibited in comparison with a sentenced Canadian prison sample. This supports the heightened presence of the cry of pain model aspects amongst this population and

indicates why there is a heighted risk period for newly imprisoned prisoners. One caveat must be stated, which relates to the normative samples being drawn from a mixed sample of male and female participants, other than for the PSS and CRI scales.

In considering the reasons for this difference between UK and Canadian prison populations on feelings of depression and hopelessness, the Canadian sample (Mills & Kroner, 2004) were a sentenced population which suggests that many may have been present within a different secure institution awaiting trial prior to measure completion and so were not new into the prison environment. As reported by Dooley (1990), prisoners on remand are at greater risk of suicide so the inclusion in this study of a significant percentage of remand prisoners would be expected to increase the risk factors. It could be suggested that this difference between different prison populations may indicate that over time individuals adjust to imprisonment and their level of depressive feelings and hopelessness may reduce. At present the DHS has not been used for research in the UK with sentenced prisoners at a later stage in the sentence and a comparison amongst stages of imprisonment would add to knowledge in relation to the hypothesis that the high-risk period is at the start of imprisonment.

The results of this study show that new prisoners also have psychosocial strengths in comparison to some other groups indicating the presence of potential protective

factors. These potential strengths are greater perceived social support than a psychiatric inpatient sample along with the use of a broader range of coping strategies in comparison with male prisoners at a later stage in their sentence (Slade & Gilchrist, 2005) and community samples (Moos, 1993). Furthermore, the CRI was one of two measures in this study for which a direct comparison could be made between male samples aiding the debate in relation to male self-harm. Some queries have been raised regarding the use of coping strategies as the findings by Cooper and Livingston (1991) indicated that more extensive use of coping strategies was related to greater distress in prison. However, their findings are not causative and there are no clear reasons or processes provided as to their finding. There are a number of plausible explanations; it may mean that a greater use of coping is due to individuals having greater confidence in using a range of strategies when times are difficult or it may mean that an unfocussed range of 'trying anything' occurs which may not be effective or directed at a solution, or that those experiencing greater distress simply are motivated to try a broader range of coping strategies. Without a better understanding of the reasons for this link between distress and coping it is difficult to consider how best to use this finding. Further research has been, and continues to be undertaken on the role, style and type of coping by men who self-harm in prison which considers self-harm as an intra-personal coping strategy for men (e.g. Marzano, 2007) which in some case is used only in prison due to a reduction in the available coping resources. Further consideration of the availability and utilisation of coping strategies will aid further understanding of the use and impact of coping strategies by men in prison.

The findings regarding the perception of social support provide good evidence that it acts as a protective factor and that the perception of positive regard and support for many prisoners is not initially adversely affected by imprisonment compared to those in hospital for psychiatric illness. It suggests that prisoners who have a feeling that they remain respected and liked by people on the outside are better able to adjust to imprisonment. The recognition that the loss of something which is held dear may have personal implications, so it may be crucial that the support is maintained as the days of imprisonment continue so that it does not add to risk and distress.

To summarise, the results confirm that prisoners exhibit vulnerabilities on entry to prison, with a more negative emotional experience in comparison to other normative populations. There is a need for additional research to explore these findings, for example, whether this vulnerability is still in place at a later stage in the prison environment. There has been support for potential protective factors including perceived social support and further research into this and the role and type of coping is required.

5.4 DISTINGUISHING PRISONERS WITH PREVIOUS SELF-HARM FROM THOSE REPORTING NO PREVIOUS SELF-HARM

The aim of this section of analysis was to consider the vulnerabilities of those prisoners who had previously engaged in self-harm compared to those who had

not. Previous self-harm and suicide attempts have been repeatedly identified as being a key risk factor in future self-harm and suicide for both community and prison samples (Fliege *et al*., 2009; Foster, *et al*., 1997; Lohner & Konrad, 2007; World Health Organisation, 2007). The analysis provided consideration of vulnerabilities which may be triggered for this group on entering prison and how these vulnerabilities may differ from those who have not engaged in self-harm.

The hypothesis for the analysis were that prisoners who reported previous self-harm would show greater psychological vulnerabilities in the direction predicted by the cry of pain model in comparison with prisoners who did not report previous self-harm (as detailed in section 5.1) . A Discriminant Function Analysis (DFA) was completed and included the variables remaining after excluding those measures on which the groups did not differ significantly (see section 4.4). The measures included were the Entrapment Scale, Defeat Scale, PSS, CRI:AR, CRI:ED, SS-A (family and friend), DHS- depression, DHS-hopelessness and LCB. The DFA provided partial support for the hypothesis. The DFA demonstrated a strong association between the included measures and the presence of previous self-harm with 76% of participants correctly classified. The most relevant measures for distinguishing those individuals who self-harmed prior to the study from those who had not previously self-harmed, were higher levels of feelings of depression and hopelessness, greater feelings of entrapment and higher perceived stress. Also significant were lower levels of feelings of defeat; greater use of the avoidant coping strategy emotional discharge (ED); greater level of hopelessness; more internal locus of control; less use of avoidant coping strategy acceptance or

resignation (AR); and poor perceived social support from family and friends. The measures found not to distinguish the groups were resilience, all approach coping strategies and two avoidant coping strategies (cognitive avoidance and seeking alternative rewards).

The findings partially support the cry of pain model with the direction of hypothesis largely supported, with previous self-harm group membership distinguished by key aspects of the model. This includes (1) the presence of stress, supported by the high level of perceived stress links with prior self-harm; (2) The presence of defeat is not supported by the DFA as a reduced level of defeat distinguished the previous self-harm group, (3) perception of entrapment/no escape is supported by the greater feelings of entrapment and hopelessness along with greater use of one avoidant coping strategies (ED) as a predictor of prior self-harm; against hypothesis, an internal locus of control was present (4) no perception of rescue is supported by poorer social support by family as a predictor of prior self-harm.

The pattern indicated by the findings is that, on entry to prison, prisoners with a previous self-harm history experience a high level of feelings of stress, entrapment, depression and hopelessness with limited perceived support from family or friends. Their distinguishing coping strategies include not resigning themselves to their situation (acceptance or resignation) but showing their emotional upset through behaviour (emotional discharge). The findings provide clear support within previous self-harm for the roles of stress, entrapment and no perception of rescue

in the cry of pain model. This extends the findings of Rasmussen *et al*. (2009, 2010) and their linking of the cry of pain model to self-harm.

The high presence of stress supports its crucial role at the early stages of the cry of pain model; with the findings suggesting that those who previously self-harmed experience greater levels of stress in the event of a stressor. Furthermore, the findings indicate that previous self-harmers are more vulnerable to the experience of imprisonment. In addition, there is a strong role for the experience of entrapment; with significant roles for three measures of entrapment: the Entrapment Scale; one coping strategies; and hopelessness. The presence of these factors confirms a strong role for entrapment in the ongoing risk of previous self-harming persons. The inclusion of depressive feelings indicates an ongoing role for this previously identified risk for self-harm, which may be activated in the event of a stressor. The activation of an ongoing pattern of risk is considered further in section 5.5.

In line with hypothesis, three of four aspects of the cry of pain model: presence of stress, perception of entrapment and the perception of no rescue emerge as predictive variables. The remaining aspect, presence of defeat did not conform to the expected pattern. Although the mean was higher on the Defeat Scale for the self-harm group, the scale did not discriminate between the groups in the expected direction. It is noted that the impact on group discrimination was less than for other factors and may indicate that the Defeat Scale is not sufficiently

discriminatory. Additionally, the analysis indicated a role for a greater internal locus of control (LOC) for distinguishing the previous self-harm group; this is against the direction of hypothesis. These findings indicate that further exploration on defeat and locus of control with this group and whether the measure is sufficient to measure the concept or whether a different pattern is present with this group than was predicted.

In considering this, the pattern from the DFA indicates that participants who previously self-harmed are less affected by defeat and maintain a more internal LOC when entering prison. However, although 13 (24.5%) went on to self-harm in prison, 40 (76.5%) did not, indicating that comparing previous self-harmers who do self-harm and those who do not may provide useful detail. Further research is required in this area. As is detailed later in section 5.5, a reverse pattern of higher levels of defeat and external LOC were predictive of those prisoners who did engage in self-harm in prison indicating that defeat and locus of control (LOC) warrant further exploration as to their role within the model as applied to a prison environment, which should include consideration of whether these factors provide some protective element for previous self-harmers.

Although the LOC and defeat findings are not in keeping with the model predictions, they only have a minor impact on group prediction with those elements which most strongly predict group membership in keeping with the hypotheses. The finding that the presence of defeat was not predictive contributes to the debate in relation to the role and structure of defeat and entrapment, which

is discussed in section 5.7.3 regarding whether the published structure is accurate or requires some adaptation for this population (Johnson *et al*., 2008; Taylor *et al*., 2009).

The sections have so far considered the separate roles of the measures in prediction. However, when considering all the findings, a picture develops of prisoners who are feeling a greatly heightened emotion but though they feel sad and stressed, they have maintained a sense that they should have some control over their situation (i.e. they are not defeated and are more likely to exhibit internal locus of control). The use of emotional expression or angry rebellion (emotional discharge) as a method of coping is consistent with previous prison research (Shea, 1993; Slade & Gilchrist, 2005) and although this behaviour may include self-harm, it can also include other emotionally-motivated behaviours such as aggression or firesetting. These aggressive behaviours have been linked with self-harm risk (Lohner & Konrad, 2007) and may also result in a prisoner being placed in segregation which has also been shown to be risk factor for self-harm (Lohner & Konrad, 2007). This consistent finding across prison research with prisoners at risk of self-harm indicates that when in combination with other factors, emotional discharge is an outward sign that could be identified by prison staff and as such it could be included within risk identification training for staff.

Furthermore, the cry of pain model also supports the presence of long-term vulnerabilities through the activation of existing 'scripts' in the presence of a stressor. The findings from this study indicate that greater feelings of perceived

stress, depression, hopelessness, entrapment and poor perceived social support interlink for a group whose previous self-harm may be any time in the past. This suggests that a pattern of risk is robust and longstanding for this group. This pattern may be activated in the presence of a stressor and if so supports the suggestion that there are patterns of emotion and thought, maybe even 'scripts' which are activated and associated with different moods (Williams *et al*., 2006). Furthermore, the pattern or 'script' for prisoners who have engaged in previous self-harm may be reactivated due to the stress of imprisonment. Thus, this pattern may be considered a vulnerability factor which could be described as the cry of pain experience, which, when activated, leads to future self-harm behaviour.

To conclude, a pattern of risk was suggested by the model for those prisoners who enter prison having previously self-harmed. This pattern of emotion and thought includes most aspects of the cry of pain model and may include a 'script' linked to self-harm behaviour. Understanding what may be termed the cry of pain experience may allow for the development of new interventions to reduce the likely full activation of any 'scripts' or 'schema' which link to suicide or self-harm. A limitation of the study was the unknown timing and recency of the previous self-harm and further exploration of the time factor may have provided additional information with regard to strength of associations. However, the associations made provide key indicators of ongoing factors which may place these individuals at greater vulnerability of self-harm on coming into prison. This extends the existing research into the debate regarding importation of risk into prisons, confirming that those who enter prison with a history of self-harm are more

vulnerable to future self-harm and suicide (Fruehwald *et al*., 2004; Liebling, 1992; Liebling & Krarup, 1993).

5.5 PREDICTION OF SUICIDE CRITICAL RISK

In order to be able to develop predictive assessment tools and effective interventions to reduce the risk of suicide within the prison environment, it is necessary for the literature to focus on developing good quality theory. This study considered the cry of pain model and its predictive value for the level of suicide risk as measured by the DHS-suicide critical item (SCI) Scale which covers 3 areas; suicide ideation, previous self-harm or suicide attempts and cognitive permissiveness for suicide.

The hypothesis for the analysis was that prisoners with higher risk of suicide as measured by the SCI scale would show more psychological vulnerabilities in the direction predicted by the cry of pain model and previous research on demographic factors in comparison with prisoners who had lower risk of suicide (as detailed in section 2.4). All factors were included in the analysis.

The level of suicide risk as reported through the SCI scale was shown by hierarchical regression to be predicted by three variables which were in the direction of the hypothesis. The variance explained by the full model was 43.5% with the

significant predictors identified as low level of perceived social support from family, higher scores on a measure of depression and greater number of times in prison. The cry of pain model was partially supported by the identified predictors although there was no clear role identified for the first three aspects: presence of stress and presence of defeat and perception of entrapment within the findings. However, the process of the cry of pain model involves the thoughts, perceptions and actions that follow a stressor and some aspects are supported. Previous research has shown that both feelings of defeat and entrapment are present when participants are depressed (Gilbert, Gilbert, & Irons, 2004; Goldstein & Willner, 2002) and this has been measured in differing ways. The high scores for depressive feelings suggests that an outcome relevant to the cry of pain model is present but the stress-defeat-entrapment process is not confirmed. The predictive power of a lower level of perceived social support confirms a key role for the fourth aspect of the cry of pain model process: absence of rescue factors. This finding supports previous research demonstrating poor social support as a short-term risk in community and prison suicide (Blaauw, *et al*., 2001; Cassells *et al*., 2005).

Depression (as measured by the DHS-depression scale) was the factor most strongly predictive of suicide risk as defined by the SCI scale. This is highly consistent with previous research examining the link between major depression and suicide risk (Bradvik *et al*., 2008). The presence of depression within the regression model goes some way to confirm that depressed affect links with thoughts and permissions for

suicide (suicide ideation and cognitive permissions aspect of SCI) and that previous self-harm is linked with depression (previous self-harm aspect of SCI).

Within the current study the risk of suicide is also predicted by poor social support, which has been consistently identified as a key risk for suicide both inside and outside prison (Blaauw, *et al*., 2001; Cassells, *et al*., 2005). O'Connor (2003) confirmed that social support can act as a buffer for other aspects of the cry of pain model, and its presence in these findings support its central role for acting in this way in relation to suicide risk. There are a wide range of definititions for 'social support' and the construct has been measured in many different ways, focusing on different aspects. The focus of the Social Support Appraisal Scale is the esteem and respect that is felt from others and closeness of those relationships but not on the style and practical aspects of that support. The current finding that social support is signficant as a protective factor in relation to suicide risk indicates the importance that the perception of feeling respected and liked by others plays, even if actual practical support is reduced by the nature of imprisonment.

The final aspect supported in the model was that repeated times in prison related to increased suicide risk. This supports previous research which reports emotional distress at its highest in the earliest stages of custody, with prisoners who had served previous prison sentences often finding the experience hardest (e.g. Zamble & Porporino, 1988). This also fits with the cry of pain model which proposes that

previous experiences create a mood induced pattern in thoughts and behaviour (Williams, *et al*., 2006). Hence, previous negative prison experiences create patterns of mood, thought and behaviour which are reactivated and intensified when re-entering the prison environment. As identified in the previous self-harm group findings above, the proposal of an ongoing pattern of risk, 'script' or 'schema' being activated and associated with different moods (Johnson *et al*., 2008; Teasdale, 1997; Williams *et al*., 2006) is supported by this finding. The elaboration of these 'suicide/self-harm script' over different prison experiences could go some way to explain the unpredictability and persistent vulnerability of some individuals and why the risk is so high so quickly for some individuals on entry to prison. This is explored further in section 5.6.

The lack of predictive factors in distinguishing those at greater suicide risk is surprising and a limitation for this aspect of the study may be the use of a scale for predicting a thankfully rare event. This study aimed to develop knowledge on suicide risk prediction but showed few factors as predicted by existing research on suicide risk (e.g. hopelessness was not significant). Therefore, some caution should be given to the predictive ability of the suicide critical item scale in distinguishing those who may complete suicide. It will be relevant that only half of suicides have a history of self-harm (Foster *et al*., 1997) and so there will be limitations in the reliability of this aspect of the measure in identifying those who go on to commit suicide. Additionally, previous research has shown that suicidal ideation is one factor leading to suicide and that the level of suicidal ideation within a prison

population is significant. For example, Way *et al*. (2005) reported that 34% of prisoners expressed suicidal ideation while He *et al*. (2001) reported a much higher figure of 72%. Although suicidal ideation is noted as a key aspect, given the very high levels of expressed suicidal ideation by prisoners the task of identifying those who may engage in harming behaviour still requires clarification as few go on to actually commit suicide. An additional problem is that many prisoners who complete suicide do not express thoughts of suicide to others. Robins (1981) reported that 69% of the suicides in their study expressed ideation to family, friends, or co-workers, but only 18% told a helping professional. This was also identified for mental health patients who completed suicide with up to 77% having denied ideation at last contact (Earle *et al*., 1994; Busch, *et al*., 2003). The over-inclusion of prisoners at heightened risk of suicide may go some way in explaining the lack of relevance for measures previously shown to be relevant to suicide risk in the model; stress, defeat and entrapment. The higher levels of all aspects within this population leads to an overall higher level of vulnerability, which linked to an over-inclusive measure of suicide risk may result in poor specificity in identifying measures of risk within the analysis. As suggested in section 5.4, there is support for further consideration of the measurement of factors in this population to increase specificity; and this analysis indicates that suicide risk, stress, defeat and entrapment may all require further development to identify those at greatest risk of suicide.

Although the over and under-inclusion of the individual factors in scoring of suicide risk limits its predictive ability, the SCI scale is as close as is currently possible in identifying what many consider to be the key aspects that link to final stages of suicidal behaviour. Suicidal ideation and planning are important steps that lead to an attempt at suicide that may result in death (Cassells *et al*., 2005; Morgan & Stanton, 1997) with previous unsuccessful suicide attempts increasing risk for later successful suicide (Hawton, *et al*., 2006). So, the scale aspects which relate to suicidal ideation, cognitive permission for suicide along with identifying a history of self-harm or suicidal behaviour, provide a reasonable basis to identify key risk aspects. However, the interaction of risk factors for suicide has not been clearly defined and the use of the SCI scale may result in many false positives being identified and the highlighting of risk which does not result in suicidal behaviour. This is indicated by the mean on the SCI scale as significantly higher than a Canadian prison sample and as such the level of risk is high across the sample which may not allow for good specificity of those likely to engage in suicidal behaviour amongst a UK Local prison population. On a positive note, the presence of some aspects of the cry of pain model process indicates that it may be appropriate to continue to consider the model for suicide risk. However, further consideration is required to measure the concepts derived from the model and to identify those at risk of suicide.

The limitations outlined above should be kept in mind when considering future research relating to suicide prediction. The findings of this study reported the

predictive power of only three factors, one of which was static but previous research has been clear that when considering actual behaviour a more complex picture emerges. Limiting the assessment of risk of suicide to one measure is restrictive and may be over-simplistic, and as these measures are over-inclusive (evidenced by no prisoners completing suicide) the ability to use it as a measure of suicidal behaviour has limitations and caveats which must be applied. However, research (e.g. Cassells *et al*., 2005) has confirmed that suicidal ideation and previous suicidal behaviour are precursors to many suicide attempts and completed suicide. Therefore, the methodology allows consideration to be given to key prison elements which are connected to these key risks but should not be considered in isolation from other suicide risk factors such as substance misuse or mental health (Bradvik *et al.*, 2010; Jenkins *et al.*, 2005).

The results clearly define a role for self-reported depression, poor social support and repeated experience of prison as key to increasing the risk of suicidal thought and permissions which alongside a history of self-harming behaviour places individuals entering prison at heightened risk of suicide. These findings are in keeping with previous research of the links with suicide risk of poor social support (Bille-Brahe, *et al*., 1999; Heikkinen, *et al*., 1994) and repeated imprisonment risk (Zamble & Porporino, 1998). The findings also somewhat extend current knowledge about the interaction between factors which link to suicide within this group. Berman and Jobes (1991) considered the interaction of factors to be of importance to consider risk and this study adds to the knowledge base of those interactions.

The addition of these findings also begin to mitigate the criticism made by Fliege *et al*, (2009) that only one study of interaction effects was available in the literature. Limitations are outlined for this analysis in relation to the measure of suicide risk which may have impacted on the preciseness of risk measurement. However, the results show some limited support for the hypothesis, with support for one of the four key aspects of the 'Cry of Pain' model (perceived absence of rescue factors) plus indications of the role of repeated 'script' activation as proposed by Johnson *et al*., (2008) and Williams *et al*., (2006). The absence of support for the remaining three key cry of pain aspects are discussed and may support a move in the literature to consider the nature of the concepts and measurement of defeat and entrapment (Johnson, *et al*., 2008; Taylor, *et al*., 2009). This is further explored in Section 5.7.5 and 5.9. The absence of significance in the model of perceived stress, defeat and entrapment may be due to low specificity of the SCI scale or a high level of all measures within this population in relation to community samples; further development of measures is warranted.

5.6 PREDICTION OF SELF-HARM IN PRISON

The core aim of the study was to conduct a prospective study to test whether the cry of pain model provided a theoretical basis for predicting engagement in self-harm within prison. The hypothesis for the analysis was that prisoners who engaged in self-harm in prison would show more psychological vulnerabilities in the direction predicted by the cry of pain model and the previous research on demographic factors in comparison with prisoners who did engage in self-harm

(hypotheses outlined in section 2.4). Only continuous variables were included in the analysis so conviction status was not included (detailed in section 4.6).

The logistic regression model showed reliable predictive ability for engagement in self-harm in prison explaining between 39.1% and 79% of the variance and correctly classifying 96.4% of all participants and 77.8% of those who self-harm. The model predictive of self-harm in prison was most strongly linked to the suicide critical item (SCI) scale followed by lower level of feelings of depression, poorer social support by friends, lower use of the avoidant coping strategy : cognitive avoidance (CA), higher perceived stress, greater external locus of control, lower feelings of entrapment and higher feelings of defeat.

The cry of pain model is strongly supported by the study findings. The key aspects of the cry of pain model: (1) presence of stress, supported by the high level of perceived stress; (2) presence of defeat is supported by the greater feelings of defeat; (3) perception of entrapment/no escape is supported by greater external locus of control; (4) no perception of rescue supported by poorer social support by friends. Those measures predictive of self-harm which were against the direction of the hypothesis were DHS-depression, Entrapment Scale and CRI: cognitive avoidance and these will be considered below.

These findings extend the self-harm and prison literature by providing detail as to the risk and protective factors which predict self-harm and self-destructive behaviours and expanding the knowledge of the impact of imprisonment for those who go on to self-harm within prison. The findings strongly support the utility of the cry of pain model as providing a robust theoretical underpinning for risk assessment and intervention for self-harm prevention. These findings also expand the knowledge of the cry of pain model to the area of self-harm with previous research largely focused on suicide risk and depression (Gilbert & Allan, 1998; O'Connor, 2003). Expanding our knowledge to a wider range of behaviours which have the potential to cause harm or fatality increases our ability to intervene and prevent harm.

The suicide critical item scale was found to be a very strong predictor of future self-harm. The scale items cover three aspects: cognitive permissiveness of suicide, previous suicidal behaviour and self-harm and current suicide ideation. This scale is not directly linked into the four key aspects of the cry of pain model although the model includes the activation of a 'helplessness script'. The content of this script is not clearly defined within the model and Williams and Pollock (2001) indicate simply that the manner in which this activation is acted upon is determined by such factors as whether there is an available means of suicide or modelling effects. Following on from the predictive links between the SCI with self-harm, it could be proposed that this 'script' contains aspects of the SCI. This is supported by a previously strong contender to provide more clarity regarding the content and role

of this 'script'; the 'suicide schema' which Johnson *et al*. (2008) suggested should be included within the model. Suicide schemas are considered to be weak in some and very strong in others but when activated, will trigger thoughts of suicide as an escape option (Christianson & Engelberg, 2006). Johnson *et al.* (2008) indicated that activation of this schema will inhibit other schema which could include less damaging escape behaviour. They outline how this schema is strengthened each time it is activated and it may become more elaborate each time and the more extensive the schema, the more likely it is to be activated in the future (Williams *et al*., 2005). This repeated activation increasing the risk of suicide is supported by the study findings reported above (in section 5.5) that prisoners who have repeatedly come to prison are more likely to experience strong suicide risk. It is as likely that previous self-harmers may have a script or schema which includes self-harm as well as suicide elements as many go on to self-harm and not commit suicide (Clark & Fawcett, 1992). This is supported by the ongoing vulnerabilities of previous self-harmers which further indicate a pattern of self-harm risk which may be activated on imprisonment (detailed in section 5.4). The strength of the relationship between this potential 'suicide schema' and engagement in self-harm indicates that the presence and content of this aspect requires careful consideration in the cry of pain model. These findings may provide further evidence that schemas should be included and evaluated as part of the model. The likely presence of individual differences in schema is confirmed through the consistent findings of complex motivations and views for self-harm and suicide (Klonsky, 2007; Snow, 2002). In keeping with the position of Marzano (2007) there may not be a single static or predominant motivation for every self-harmer and the presence of individualised

schema allows for the complexity of the motivations to be included in the model. This also allows for greater exploration of the role of gender specific aspects of motivations and actions, including the choice of method which has significant difference between genders. Greater exploration of the role of schemas should be included and evaluated as part of the model. Further work is also required into the process by which these vulnerabilities are formed and the presence of 'self-harm schema'.

This strong predictive link between the suicide critical item scale and future engagement in self-harm also lends support to the argument that self-harm and suicidal behaviour are inextricably linked and, for many, are part of a continuum of behaviour (Muehlankamp & Gutierrez, 2004). The difference in the pattern of predictors for self-harm and suicide do, however, indicate that there is a different emotional experience between the two behaviours and it may be that self-harm and suicide risk capture different experiences. It has been reported that self-harm is, in many cases, a precursor to suicidal behaviour (Clark & Fawcett, 1992; Foster *et al*., 1997). The presence of depression symptoms within the suicide risk group but low depressive symptoms within the future engagement in self-harm group may indicate that this is a key variable. Of relevance to the discussion, is that depression measured by the DHS scale in those early days of imprisonment may not meet the criteria for major or clinical depression (DSM-IV or ICD-10). It may be classed as a reactive depressive state triggered by recent events but events which have had a serious impact on the emotional wellbeing and life course of individuals. The

conclusion can be drawn that although depression is linked with suicide risk and may be greater in those with a history of self-harm, it was not found to be a unique factor in the process leading to self-harm. This is in keeping with the findings of Parker, *et al*., (2008) who report that only 39.4% of men who presented at hospital after an episode of deliberate self-harm were subsequently diagnosed with depression. There was a higher rate of diagnoses reported for females (48.9%) although the majority of both genders did not meet the DSM-IV criteria for depression. Depression (both major depression and self-reported depressive feelings) are therefore not supported as a sufficient factor in suicide nor a necessary factor in self-harm but has a role to play in both outcomes, although negatively related.

Extended from these findings, it is possible that it is this differing experience of depression which distinguishes self-harm from suicidal behaviour – with the heightened presence of strong stress emotions, frustration and ongoing agitation as being most relevant for self-harm (Snow, 2002;,Klonsky, 2009; and for female remand prisoners (Coid, Wilkins, Coid & Everitt, 1992); and for depressed emotional experience resulting in low agitation being more relevant within suicidal risk (Cassells *et al*., 2005). This depressive experience could explain why prisoners who are at high risk of suicide reported a more limited emotional response than would be predicted by the model (i.e. not predicted by entrapment, defeat and stress feelings) and that contrary to the hypotheses, low levels of depressive feelings are linked with self-harm. It may therefore be that the experience of strong depression

overwhelming the experience of other emotions may present a group more at risk of suicidal behaviour. The findings expand knowledge to the male experience, regarding the differing emotional experience between self-harm and suicide, which has been previously suggested for female prisoner self-harm.

There were other findings contrary to the hypotheses. These were lower scores on the Entrapment Scale; no difference in the use of coping strategies (other than less use of one avoidant coping strategy -cognitive avoidance); and no difference in resilience and hopelessness. The analysis indicated that lowered scores on the Entrapment Scale would slightly increase risk although the presence of entrapment was indicated from other measures (e.g. locus of control). Given the nature of imprisonment as reducing the capacity for physical escape from the situation, it may be that some of the Entrapment Scale items do not have the same meaning as they might for a community sample. The absence of prediction by resilience, hopelessness and most coping strategies indicates that these measures may not be relevant for the prediction of self-harm in prison and that intervention based on developing these aspects may not be fruitful. The avoidant coping strategies present amongst previous self-harmers (emotional discharge and acceptance and resignation) are not present within the future engagement in self-harm group and the coping style has shifted to self-harmers using a similar level of coping strategies as non-self-harmers other than a reduced use of cognitive avoidance. This finding suggests that the coping strategies in the CRI are not relevant in the prediction or risk reduction for self-harm or that research considering the coping style of

prisoners should focus on coping specifically with self-harm triggers. There is a speculative interpretation of the finding with regard to cognitive avoidance, which is a coping strategy defined as 'cognitive attempts to avoid thinking realistically about the problem' (Moos, 1993). The finding indicates that those who go on to self-harm are spending more time thinking about the problem than those who do not self-harm. Whether this additional time is problematic or may be rumination would need to be explored in future research.

In summary, the findings regarding high perceived stress (presence of stress) and defeat (presence of defeat), external LOC, (perception of entrapment) and poor social support by friends (perceived absence of rescue factors) are all in keeping with hypotheses. They also fully support the presence of all aspects of the cry of pain model as predicted. This support for the model provides for a confident move towards a theoretical model underpinning self-harm which is relevant for the prison environment. These findings also support previous research linking these elements with self-harm within prison and in the community (Eyland, *et al*., 1997; Fliege *et al*., 2009; Lohner & Konrad, 2007; Toch, 1975). The finding relating to the strength of the SCI scale supports its potential role in a 'script' linked with self-harm which is activated (Johnson *et al*., 2008). The findings that depression symptoms, entrapment (from the Entrapment Scale) and coping strategies do not fit with the direction of hypothesis raises avenues for further exploration about the emotional experience of prison, the differentiating aspects of entrapment and the style of coping employed.

5.7 TESTING THE CRY OF PAIN MODEL

The overall findings provide good support for the cry of pain model in understanding the process of self-harm and some support for its utility in predicting suicide risk within a prison environment. The following sections consider the role of each aspect of the model and how fully they have been supported, by which measures, the limitations identified in the study and the theoretical implications of the findings. In addition, a consideration of which measures have value in the prediction of self-harm or suicide will be undertaken along with those which may need additional consideration or adaptation.

5.7.1 Presence of Stress

The study used the Perceived Stress Scale (PSS) to measure the perception of stress. Overall the prison population report a higher level of perceived stress than a community sample which is consistent with previous research findings (Cohen and Hoberman, 1983). A higher level of perceived stress was also predictive of those who reported previous self-harm and those who engaged in self-harm within prison. Perceived stress was not predictive of current suicide risk in this study. The high level of perceived stress amongst the prison population compared to community samples indicates that the experience of entering the prison environment is a stressor for most individuals and is additionally stressful for those who engage in self-harm. These findings support previous research that the early stage of imprisonment is a very stressful period (Paton & Borrill, 2004; Zamble &

Porporino, 1988). The relevance of the PSS in distinguishing groups would suggest that it is a useful tool for use within a prison environment in identifying those experiencing high stress.

The link between perceived stress with previous and future self-harm supports the assertion that the experience of stress is critical in the process of self-harm, as indicated by the cry of pain model. It also expands the literature on the link between the cry of pain model and self-harm. The finding that perceived stress was not predictive of suicide risk may indicate that the high level of stress across the whole sample is somewhat masking its relevance. There are no details in the cry of pain model as to the level of stress required or whether it is simply the experience of stress which is relevant. It would be plausible to assume that it is the reaction to that stress which is important in distinguishing between those who engage in suicidal behaviour and those who do not when stress levels are high across a population. If, as is indicated, the experience of imprisonment itself can be considered a major stressor, consideration of the minimisation of this stress across this population may reduce risk of self-harm and suicide.

5.7.2 Presence of Defeat

The study utilised the Defeat Scale to measure defeat, using the definition of defeat as outlined by Gilbert and Allen (1998) (section 2.2.2). Prisoners report a higher level of feelings of defeat than a student sample and a lower level than depressed

patients (Gilbert & Allen, 1998). This would indicate that the experience of prison increases the perception of defeat but not to a level to be relevant in the experience of major depression. An increase in defeat was found to increase the likelihood of future engagement in self-harm as predicted by the cry of pain model. The study supports a role for the perception of defeat as a predictor of future self-harm but not for current suicide risk, and has a contrary finding with a slightly reduced defeat level linked with previous self-harm. Because defeat was predictive in the aspect of the study examining behaviour longitudinally (and hence future behaviour), it is clearly an important aspect of the cry of pain model. The mixed picture for defeat in suicide risk and previous self-harm may indicate that this element is more fluid and changeable than other elements of the model and that its presence may indicate intent of future action. It is also possible that the Defeat Scale is less able to distinguish this concept as effectively within the population and some adaptation could be considered; this is discussed in section 5.7.3 below. The loss of social rank, as is the definition of defeat, may be emphasised within a prison environment. The work of Marzano (2007) questions whether the sense of shame and, by extension a loss of social rank, for men is more pronounced when entering prison. If the concept is accepted that prison is an 'ultra-macho' environment (Cowburn, 1998; Jewkes, 2005; Newton, 1994) then imprisonment may intensify the sensation of defeat if comparisons regarding masculinity are made against men within that environment. Exploring this aspect may aid the defining and assessment of defeat within male prison environments.

The findings in relation to defeat are novel in the literature as its application to self-harm and within a prison environment has not previously been explored. The findings expand the literature by endorsing a role for the presence of defeat but also challenge the expansion of the concept of defeat without adaption to this population.

5.7.3 Perception of entrapment

The study utilised a range of measures to consider different aspects of the perception of entrapment and to consider which aspects were most relevant in distinguishing the risk of self-harm and suicide. The Entrapment Scale was used as a direct measure as defined by Gilbert and Allen (1998). In addition, the Locus of Control of Behaviour (LCB), DHS -hopelessness and Coping Responses Inventory (CRI) were used to consider the control that an individual felt over their lives (and by extension whether they felt trapped by external forces or felt that they had some control over their situation). A mitigating factor was also considered by measuring resilience using the Resilience Scale; thus, if a prisoner felt able to cope and manage he would feel less trapped. The scores on all measures of entrapment utilised in this sample were higher than those reported for community samples (see section 4.3) except for the seeking alternative rewards (AR) subscale of the CRI which was comparable with community sample scores. The Entrapment Scale scores, although higher than a community population, remain significantly below those of depressed patients (Gilbert and Allen, 1998). Therefore, the experience of

imprisonment does not lead to a direct interaction between entrapment and feelings of depression.

The study supported a role for entrapment in the cry of pain model. The presence of the perception of entrapment is relevant in distinguishing group membership for prior self-harmers from those who had not self-harmed, and for predicting prospective self-harm. The finding that self-harming participants have a higher level of entrapment than controls is consistent with the findings of Rasmussen *et al.* (2010). However, no measure of entrapment was identified as predictive of suicide risk. As described in section 5.5 and 5.7.2, the lack of prediction for entrapment in suicide risk may be due to the limitations of measurement of suicide risk, the SCI scale does not link with future behaviour but the presence of thoughts regarding suicide and previous behaviour.

The measures which link with future and previous self-harm were different for each analysis. An external locus of control was relevant in predicting future engagement in self-harm; greater entrapment on the Entrapment Scale, greater hopelessness and greater use of the avoidant coping strategies: AR and ED were relevant in distinguishing the previous self-harm group. This directly extends the findings of Rasmussen *et al.* (2010) that patients who had self-harmed reported higher levels of entrapment, to a prison sample of previous self-harmers. However, the Entrapment Scale has limitations in predicting future behaviour as lower scores on

the Entrapment Scale for future engagement in self-harm were reported (section 4.6), contrary to the hypothesis. The Entrapment Scale is reported as covering two elements, firstly feeling trapped by external forces (similar to the locus of control measure) and secondly feeling trapped and wishing to escape from oneself. The previous and future engagement in self-harm groups has a divergent direction for scores on the Entrapment Scale and LCB. However, the groups have a consistent direction for the Entrapment Scale and DHS-depression. The findings indicate that previous self-harmers have high entrapment, internal locus of control (LOC) and a high score on a measure of depression in contrast to future self-harmers who have a pattern of low entrapment, external LOC and low level of depression. This may therefore indicate that previous self-harmers feel more trapped by their own thoughts and emotions than by others (high Entrapment Scale, internal LOC, greater feelings of depression) but that future engagement in self-harm is defined by feelings of entrapment by external forces rather than by themselves (low Entrapment Scale, external LOC, lesser feelings of depression). The PCA for the Entrapment Scale (section 4.2.1.2) did not distinguish separate scales for the Entrapment Scale and some further development of a relevant scale for a prison population may tease out these differences and provide important insight into the aspects of entrapment most relevant in self-harm. Included in future considerations should be the Defeat Scale which also provided a mixed view in relation to self-harm and suicide. An overlap between defeat and entrapment has been suggested (Johnson *et al*., 2008) and that defeat and entrapment may be two aspects of a single construct (Taylor *et al*., 2009). Avenues for development are

explored in sections 5.8 and section 5.9 below as future theoretical developments and empirical research.

The last section to consider is the role of coping strategies in entrapment. The greater use of Acceptance and Resignation (AR) and Emotional Discharge (ED) as coping strategies by previous self-harmers would indicate that although they accept or resign themselves to a situation they may perceive as hopeless, they are more likely to express their emotion outwardly, for example, through aggressive behaviour or crying. Conversely, those who went on to self-harm were predicted by less use of cognitive avoidance, so were thinking more about their problem but did not show the AR and ED coping patterns of the previous self-harmers. This difference in coping styles between the previous self-harming group and those who went on to self-harm is not explained within the model and consideration of this area may be useful as it may identify those at imminent risk of self-harm. Resilience and approach coping strategies did not play a role in the prediction and association with any studied aspect of self-harm and suicide so these suggested protective factors for entrapment have not been supported within the research.

The overall findings indicate that although entrapment is identified in the process of self-harm, further research is required. This research should aim to clarify the key concepts of entrapment which are most relevant for predicting self-harm, the vulnerabilities of those who have previously self-harmed and the changes that take

place to move someone closer to self-harm behaviour. The research does indicate that within the prison environment the risk of self-harm increases with the feeling that external forces have control over what happens. The lack of entrapment identified within suicide risk requires further consideration and whether this is an outcome only of the measure used or whether entrapment is actually less relevant than the other factors identified in the regression model. The findings suggest the need for further consideration of the concepts of entrapment and defeat to define them for this population.

5.7.4 Perceived absence of rescue factors and social isolation

The study strongly supports the fourth aspect of the cry of pain model, perceived absence of rescue factors and social isolation. This is demonstrated by the consistent presence of poor social support (as measured by the Social Support Appraisals Scale (SS-A)) in the prediction of both self-harm and suicide. Prior self-harm and current suicide risks were both associated with a lower level of perceived social support from family (see section 4.5). The risk of future engagement in self-harm in prison was predicted by a lower perceived social support from friends (see section 4.6).

Poor family support indicates a loss of respect or weak social ties with family and the findings reveal that this increases the risk of suicide and is also identified by those reporting previous suicide attempts or self-harm. It is possible that for many

of the prisoners, family ties were disrupted from an early age as previous research has determined that prisoners at risk of suicide and self-harm have an above average history of family trauma (Sarchiapone, 2009). The cry of pain model does not outline the process by which this loss of support is developed nor from whom that loss comes, but that a sense of a perceived absence of social support and social isolation is the outcome. This outcome is supported by these findings as poor family ties can increase risk of both suicidal thoughts and harming behaviour.

Additionally, future engagement in self-harm within prison was strongly predicted by the perception of lower level of social support from friends. The finding indicates that supportive connections with friends are poor within this group, linking with previous findings that the lack of support from friends is connected to feelings of anxiety, depression or psychological morbidity (Cooper & Berwick, 2001). Social support was the second most important predictive factor with this behaviour, with the risk of self-harm increasing more sharply as social support decreases in comparison to most other factors (as described in section 4.6). This demonstrates that the sense of not feeling respected or liked by friends is an important risk factor for this population. This finding may also indicate that this group may have real or perceived difficulty in making and maintaining supportive friendships. This would result in additional strain or fear within a prison environment where many people would be strangers, increasing the likelihood of continued social isolation.

Although the poor social support was related to different groups for suicide and self-harm, this may be a result of the social network of those groups. This was not considered as part of this research due to the relevance of the source of support or rescue not previously being outlined in the cry of pain model. The finding therefore extends the research into the cry of pain model indicating that the social support group may require exploration. The key finding that poor social support is predictive for all aspects of self-harm and suicidal thoughts, even though the prison population as a whole reports better social support than a psychiatric population, confirms social support as crucial in the risk assessment process for self-harm and suicide (Bille-Brahe, *et al*., 1999; Blaauw, *et al*., 2001; Heikkinen*, et al*., 1994; O'Connor, 2003). It also suggests that ongoing research is required to develop and evaluate effective ways of improving social support for this vulnerable group whilst in prison and in the community and options are discussed in section 5.9 below.

5.7.5 Summary and Conclusions

In summary, the cry of pain model was strongly supported with all aspects of the model predictive of future engagement in self-harm; and three of the four aspects distinguishing the previous self-harm group. The model was not fully supported as predictive of suicide risk and it is suggested that this is due to the methodology for assessing suicide risk as too inclusive and that greater specificity is required. The support for a predictive link between the cry of pain model and self-harm is a novel finding and has not, to the author's knowledge, been undertaken previously. The model was also used to consider self-harming behaviour within a prison

environment and clearly shows the role of two key aspects of the model, presence of stress and perception of no escape/poor social support in prison self-harm. Few protective factors have been identified in the study as coping strategies were often similar between groups and resilience was not a distinguishing factor or predictive of group membership. The role of social support though remains a central factor for all risk groups and perceived stress is also important. Both these aspects are amenable to change on either an individual or a system-wide basis.

The picture emerges of two parallel systems in relation to the defeat and entrapment aspects of the model: The first involved greater feelings of depression and distinguished prisoners who engaged in previous self-harm when linked with high entrapment (on the Entrapment Scale), internal LOC but not defeat. This may indicate that for previous self-harmers entrapment is a feeling of being trapped by their own thoughts and emotions rather than by external forces. Crucially, it is indicated that this group has maintained the belief that there is still opportunity for change, through the presence of internal locus of control and low defeat. In summary, the format for this group is high entrapment (on the Entrapment Scale), internal LOC, greater feelings of depression and low defeat. The other system is where defeat is high and locus of control is external but entrapment (on the Entrapment Scale) scores and especially depression are low and this is the pattern linked to future engagement in self-harm in prison. Future engagement in self-harm may therefore be predicted by feelings of being overwhelmed by external forces rather than by themselves (external LOC, high defeat, less feelings of

depression). Further evaluation of the link between defeat and self-harm in the absence of depressive symptoms or feelings of entrapment should be undertaken to consider its role in the risk of self-harm.

The indicated parallel systems are in keeping with the cry of pain model as the external and internal entrapment feelings are recognised as two separate aspects of the perception of entrapment. However, the PCA for the Entrapment Scale did not distinguish separate scales for this population and there may be some benefit to exploring whether defeat, depression, locus of control and entrapment should be considered alongside each other for the consideration of the factors which are relevant and can distinguish the processes for this population. This proposal is supported by more recent suggestions that defeat and entrapment may not be independent contributors and that there is an overlap between these aspects (Johnson *et al*., 2008). A factor analysis confirmed this within a student population (Taylor *et al*., 2009). These authors suggest that defeat and entrapment are two aspects of a single construct which is defined as 'a perception of failure without a way forward' (Taylor *et al*., 2009). Related to these findings, it is proposed that differing emotional experiences distinguish the risk factors of self-harm from suicidal behaviour – with strong stress emotions, frustration and ongoing agitation connected with self-harm but depressed emotional experience with low agitation related to suicide risk. Further exploration of the emotional experience of prisoners may allow these findings to be teased apart and further clarity to be gained on the differing emotional patterns for prisoners at risk.

The findings in this study also give weight to the proposition by Johnson *et al*. (2008) that when experiencing aspects of the cry of pain model, the outcome is affected by a combination of the content and strength of individual 'scripts' or 'schema' along with a pattern of negative feelings and the evaluation of rescue. If an individual has, as part of their 'schema', self-harm or suicide as a means of gaining relief, then the relevant behaviour is more likely to occur. Repeated imprisonment was linked to suicide risk and supports the proposition that repeated activation of the script may strengthen the suicide aspects and increase the risk of suicide. In addition, it would be beneficial to understand the role of the prison environment in activating the schema. Further research may wish to explore differing aspects to consider circumstances which lead to schema activation so to identify the role of the prison, in comparison to other aspects of the experience. For example, whether persons charged with offences but not imprisoned also experience schema activation.

Additional research is critical to confirm the factor structure of the defeat and entrapment aspects of the model, differing emotional patterns and the presence of differing 'schema' as relevant factors in the cry of pain model in order to improve its utility as a theoretical model to assess individual risk.

5.8 IMPLICATIONS FOR PRACTICE

As the first study to consider the utility of the cry of pain model in predicting self-harm and suicide risk within a prison population, this study can provide knowledge and understanding to inform current prison self-harm approaches. The cry of pain model has clearly been shown to have relevance to understanding the process of self-harm in the early stages of imprisonment, the key vulnerabilities of prisoners who had previously self-harmed and identifying those who are likely to self-harm within the first weeks of imprisonment. Given the violent and potentially fatal nature of a significant proportion of self-harm within the prison by male prisoners (e.g. hanging by ligature), continuing to develop understanding is vital in order to prevent suicide and serious self-harm.

Of equal importance is the application of this knowledge to practice within prisons and considering how this may best be achieved. Applying the cry of pain model to risk assessment processes within prison induction processes may assist in determining those prisoners who are at greatest risk. However, any system must take into account how difficult it may be to identify the aspects of the model within a busy local prison with high prisoner to staff ratios and a quickly changing population (average stay of 4-6 weeks and 30-60 prisoners leaving and arriving each day).

The current process of support for prisoners at risk of self-harm or suicide is called 'Assessment, Care in custody and Teamwork' (ACCT). As outlined in section 1.6, the ACCT process aims to identify risk, provide an assessment of risk and reduce risk through intervention and risk management.

Firstly, this study has provided clearer guidance as to key aspects which would allow for the identification of those prisoners at greatest risk on arrival to prison. The current format of risk assessment on arrival in prison relies on individual judgement based largely on the presentation of the individual and self-reported history which includes questions about previous self-harm, depressive symptoms and the expression of suicide/self-harm ideation. The factors from this study predicting future engagement in self-harm support the use of these identifiers (previous self-harm and suicide ideation) as key to the risk of suicide and self-harm. The finding on suicide risk also supports the identification of feelings of depression as vital for risk assessment. Furthermore, from this study a separate pattern has emerged which outlines that prisoners who self-harm in prison may have few depressive symptoms and fewer than their peers. The pattern would indicate that prisoners experiencing high stress, high feelings of defeat, poor support from friends and an external locus of control are at risk of self-harm and so also require identification and support. There are no cut-off points or bandings indicated within this study for any of the scales or their interactions which place individual prisoners at greater risk. Further development of this area may assist prison staff in identifying those prisoners who require detailed assessment and particular

intervention strategies. However, the results also indicate that the presence of a combination of a high suicide risk scale score, high stress, poor social support and one or other of defeat and entrapment should flag a concern warranting further investigation. Recognition of both patterns would provide staff with the chance to identify those prisoners who are at greatest risk of self-harm and suicide and hence to focus resources on those individuals.

Secondly, the ACCT process states that a fuller assessment must be completed within 24 hours of a risk being identified. The assessment requires a judgement to be made by prison staff based upon information gained from file information and the prisoner. The assessment was developed on the basis of the factors previously identified as relevant in suicide research. Current practice and the ACCT processes identification of risk and assessment can be significantly improved by using a theoretical basis along with an understanding of the interaction and strength of factors. The development of the ACCT assessment using the findings in this study would improve its ability to predict those at greatest risk. This may, in time, allow for improvements in distinguishing those at risk of self-harm from those at risk of suicide. All current assessments also currently rely, to some extent, on the prisoner having good insight into his intentions and needs. This is because the assessment asks general questions and allows for judgement from the interviewer as to the follow-on questions asked and the level of exploration required. This is a necessary aspect of the interview in order for the assessment to be tailored to the needs of the individual. This approach has limitations as many prisoners who self-harm have

reported their self-harm as 'something that just happens' which they cannot always predict (Marzano, 2007). Without moving away from the individualised assessment, the provision of additional measures to supplement the assessment process, which are consistent with theory for self-harm and suicide risk, would further aid the task of identifying vulnerable individuals. Using the cry of pain model as the theory to underpin this enhanced assessment has been supported in this study.

Of further importance to practice, is the notable improvement in the classification of prisoners (on whether they would self-harm in prison) by using the study findings when compared with the current ACCT process. For example, in a seven month period at the time of the study, 332 ACCT forms were opened by staff, with 100 incidents of self-harm by 45 prisoners. This equates to over three times the number of prisoners on ACCT than those who self-harm. In addition, 39 prisoners completed an act of self-harm without an ACCT form open, (equating to 39% of prisoners who self-harm not having an open ACCT); indicating that risk was not identified in those cases. The identification of those who went on to self-harm through the logistic regression model in the study was 77.8%; with the current ACCT process identifying 61%. An improvement of the identification of risk and the opening of ACCT forms would mean the completion of a more detailed assessment and management process would reduce the likelihood of self-harm. The reasons that ACCT forms are opened are many and remain appropriate to prevent self-harm (e.g. previous self-harm, low mood and current suicide ideation). That said, the

classification of prisoners who will self-harm would be improved by up to 17% if the model identified for future self-harm is applied to practice. This significant improvement in identification would allow for resources to be targeted at those at greatest risk of self-harm in prison; therefore reducing the likelihood of self-harm in a significant proportion of prisoners. It would also improve the confidence of staff in identifying those at risk and given the current climate of resource cuts within all sectors of the Civil Service, a clearer focus for those resources would be most timely.

This study supports the need for changes to be provided to the training of staff so that they can identify the broader range of signs of concern. In addition, a greater understanding of the methods by which the risks can be identified would aid in the identification of those at risk plus providing clarity to the assessment. Assessors should be trained to be able to utilise a range of methods to identify risk, the reasons that risk is present (e.g. the aspects of the individual's coping strategies which is increasing feelings of defeat and entrapment) and how to guide case managers in addressing those factors. Training should also include the development of understanding of how risk factors interlink.

A key area of concern within prison, are those prisoners who repeatedly self-harm and the best methods to manage and support them. Using these findings, it would be useful to identify those prisoners who repeatedly self-harm and monitor their

feelings in relation to the cry of pain model over time; with an assessment of their interlinking needs to be undertaken on that basis. This monitoring may allow for the earlier identification of increased risk, including the strength of the suicide schema. Gaining a greater understanding of these prisoners over time would also allow for the development of theoretically based interventions to reduce the risk of eventual suicide for this group, by basing interventions on the model and the minimisation of strengthening of suicide schema. At present the ACCT process does not insist on a repeated, detailed theoretically based assessment over time to be conducted. Although assessments may be picked up by specialist medical or psychology staff, this is not routinely an aspect of the role of any specialist across prisons. The process may be improved by the inclusion of a full repeated and linked assessment for those prisoners who self-harm using the cry of pain model as its basis, paying particular attention to the levels required for that individual for self-harm to take place and the content of the 'schema'. This would provide prison staff with detailed and useful information in managing, treating and preventing self-harm with a group of prisoners who repeatedly self-harm.

The other key group for a detailed theoretically driven assessment and intervention approach are prisoners considered at imminent risk of suicide, often due to suicidal ideation being expressed. An assessment based upon the cry of pain model may provide a clearer picture of the current distress, the content of the 'schema' and a clearer basis for intervention. The current practice when a prisoner is considered at high risk of suicide is the use of constant or frequent (10 - 30 minute) observation.

The literature reports that 15 or 30 minute checks are not enough to prevent suicide. Busch *et al*. (2003) found that 42% of the suicides in an inpatient psychiatric hospital occurred when the patients were on 15-min checks and another 20% when on 30-min checks. Even under constant observation, Kennedy, Whittington, and White (1995) report two suicides that were committed beneath blankets while staff continuously watched. In the case of very high risk of suicide, intervention is required with the individuals concerned to reduce the distress – the cry of pain model, as supported in this study, provides a template for the areas which could be addressed in intervention to reduce that risk.

Having considered the implication of the findings on the identification and monitoring of risk, the next section will consider the implications on interventions. The cry of pain model provides a basis for a theoretically based model of risk reduction for those at risk of self-harm and suicide. Although there are still some questions regarding the exact definition and role of entrapment and defeat, there are aspects which have been indicated in the patterns detailed above which can be followed up. Firstly, the experience of perceived stress is the starting point in self-harm and any intervention should focus attention on addressing the triggers, practical and emotional, relevant to the individual. The experience of imprisonment itself has been shown to be a major stressor across participants, and the model would indicate that a reduction in the experience of stress would reduce the risk of self-harm or suicide. However, it is clear from the high level of stress across large numbers of prisoners that individual or even small-group work for all

stressed prisoners would be prohibitively expensive. The other three aspects of the cry of pain model and their interactions would assist in indicating which prisoners resources can best be targeted towards. That said, the experience of stress can be mitigated or minimised through the reception and early stages of imprisonment. The practical issues which many individuals would experience should they be imprisoned will provide a source of stress which can be managed with assistance. So, for example, ensuring that all prisoners in the very early stages of imprisonment have the opportunity to manage and gain assistance in practical issues with family, pets, work, maintaining accommodation, and so on could alleviate stress. Additionally, an understanding of the individual's concerns would allow for considerations to be made to minimise the stress. For example, assisting those prisoners who may have issues with certain other prisoners or for whom it may be their first time in prison and who require help in understanding the processes and their rights.

Linked to the findings that entrapment and locus of control were relevant for self-harm, interventions should also include the development of a sense of control of their life, being able to make choices that have an impact and bring about a change or development to their life. This would also reduce the sense of being trapped without the opportunity to escape. This may include the development of new skills, having a supported planning process or maybe finding a role within the prison which they perceive as having some status. At present, all prisons do provide some access to education or employment with all prisons having a percentage of

prisoners in employment. However within the study prison and other local prisons, there were significant limitations as to education and employment opportunity available with limited spaces available within the prison. In addition, the London Initial Screening and Referral Tool (LISAR) (a 'custody planning' tool) is completed in the first days of custody which involves a self-report questionnaire regarding issues such as employment, housing and health issues. The aim of this LISAR tool is to identify resettlement needs on release from prison and key factors related to offending and health. At present this does not consider issues relevant to the cry of pain model directly, such as how to reduce stress or distress on imprisonment or how to improve adaptation to imprisonment. New and existing strategies would benefit from structured evaluation and measurement to allow authorities and those charged with the care of these prisoners to utilise and develop effective systems to reduce stress. By continuing to develop system-wide processes which meet these needs, the overall level of the stress of imprisonment may be minimised.

Finally, a consistent theme in the findings is that of the role of poor social support, this aspect being relevant with all analyses, both self-harm and suicide risk related. The reasons why external support may seem poor are manifold and consideration needs to be given to the ability of the individual to develop external social support and the quality of existing external support. Depending on the reason for support difficulties, those who require social skills training to develop the skills to maintain good support, emotional management or other individualised aspects of skills

development would benefit from access to these. The maintenance of existing social support networks should be a priority within establishments, with access to phones, letters and visits maintained for all prisoners. The development and maintenance of initiatives which also support the families of prisoners also ensure that support can be maintained by those family members outside prison, thus reducing the strain. Reduction in the risk for all prisoners could also be achieved through the development of social support networks within the prison environment and is an area over which prison authorities may have some control. The development of 'buddy' or 'mentor' systems for all new prisoners along with the consistent use of prisoners trained by 'The Samaritans' (known as 'Listeners'), as is present in some prison establishments, would allow for the development of social support networks with practical and emotional support. These systems should also be evaluated in future research to consider which maintain and develop support most effectively and reduce the perception of poor support.

It is useful to consider that the role of prison is to dispense justice and its role as punishment, through the loss of liberty, dominates its procedures. Prison is designed to be a negative experience for those who are found guilty of offences but chiefly through the loss of physical liberty with other aspects of procedure and treatment of prisoners being within the control of prison Governors and policymakers. The United Nations Human Rights Committee has made it clear that prisoners enjoy the right to be treated with humanity, dignity and respect while in

detention (Convention Against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment, 1984).

Therefore, the striving of HM Prison Service for the maintenance of a fair, decent, responsive and predictable environment which allows individual needs to be met without increasing distress and stress (e.g. through an unpredictable regime, not allowing personal choice, unfairly reducing social support or increasing stress) is not at odds with the premise of prison as punishment. So, although there may be limitations within prison in the amount of individual control and stress reduction that can be achieved, continued development of aspects in relation to the cry of pain model can be sought.

Overall, the findings of the study clearly provide support for a theoretical underpinning for suicide and self-harm within local prisons which can be directly applied to practice within prisons and the ACCT process, with the potential to notably improve, by up to 17%, the classification of prisoners at risk of self-harm in prison. In addition, the identification of distinct patterns distinguishing different groups at risk provides guidance as to how risk can be identified and managed. Developing the understanding of the differences between groups will aid the allocation of resource and the development and focussing of suitable interventions for these groups. The completion of further assessments over time will aid knowledge of the process and guide risk management for an individual.

The premise of the cry of pain model is that the risk of suicide greatly increases under specific conditions; when people perceive themselves as stressed, defeated and trapped without perception of rescue. This process has been shown to be present across prisoners who may have other vulnerabilities present when they enter prison (e.g. mental health issues or substance misuse). Although not directly tested in this study, the strong support for the model, when considered alongside the finding that the model is supported for patients with schizophrenia (Johnson, *et al*., 2008), indicates that the model provides an underpinning process to which these other vulnerabilities may link. This study has also extended the relevance of the model to self-harm within prison and suggests that self-harm and suicide may, in many cases, be aspects of the same process, but at a different stage, content and intensity. The benefit of considering self-harm and suicide as part of a continuum of behaviour and within a single model is that it allows prison authorities to plan for a single process. It allows authorities to identify and intervene with these individuals, based on a single process, as long as the individual differences are also clearly considered within that practice.

Although this model has been shown to predict significant percentages of those who self-harm, it should not be considered that this is the full picture of self-harm within the prison walls. The manner, frequency and seriousness of self-harm within prison is varied and this is just a starting point for developing better tools to support those prisoners who are most at risk. There are also individuals who have

engaged in self-harm or suicidal behaviour within prison for instrumental reasons which are not indicated by the emotional basis of this theory. For example, they may see committing self-harm as a way to gain an outcome which is not in keeping with the model's premise (e.g. a move to hospital to attempt escape). The findings from this study support the view that the overwhelming majority of self-harm in prison is emotionally-led with a sense of stress, defeat and social isolation or loss. As considered in section 2.1.2, the cry of pain as predicted by the model may initially still include an element of a 'cry for help' in many cases of self-harm or may result in less serious self-harm. These cries must be taken seriously as many prisoners who self-harm go on to suicide at a later stage in their life (WHO, 2007).

5.9 METHODOLOGICAL LIMITATIONS AND FUTURE RESEARCH

A number of future research directions are suggested from the findings. Of most relevance is the confirmation that an interaction of factors is predictive of self-harm and suicidal risk in line with the cry of pain model as an underpinning theoretical rationale. The present study looked only at the early days of custody and it cannot be assumed that the results can be generalised to latter stages of imprisonment. Replication of the research and considering of its applicability at various stages of the prisoner's sentence would allow for consideration of system changes to meet the needs of all prisoners. In addition, the follow-up period was four months from baseline measures and it cannot be assumed that the feelings of prisoners remain static over time. Future research could evaluate the optimum period over which results can be used to identify those at risk.

Strengths of the study included a methodology where prisoners at induction were approached within days of arrival in prison leading to a highly representative sample of the population. In addition, the prospective methodology allowed for prisoners to be included regardless of previous history. This allowed for conclusions to be made across the population and allow for its application to all prisoners on arrival at prison regardless of any previous grouping. The prospective aspect has also allowed for conclusions to be made regarding future engagement in self-harm based upon measures prior to the event in comparison to many research studies which relied on the retrospective study of self-harming behaviour. The size of the study has also allowed for considerable robustness in the conclusions and predictors.

A limitation of the study was that due to the sole use of English language measures the study was restricted to English speaking prisoners only, although it did include prisoners from different countries who had sufficient English language ability. Only two prisoners requested participation and were excluded due to this issue and as such this would be unlikely to impact on the outcome. Prisoners who were experiencing active psychotic symptoms for longer than the first four days of imprisonment were also excluded from the study. Due to the accepted link between mental health and self-harm and suicide this may have removed from the sample some vulnerable prisoners who might have self-harmed. Prisoners were asked to state if they had a current or previous mental health issue with 18%

responding positively to this question; hence many with wider mental health issues were included in the study. Although not directly tested within the study, the study population included prisoners with mental health and substance misuse issues amongst other areas of risk. The findings and support for the cry of pain model could be tentatively applied as a starting point for further research into understanding the mental health and substance misuse link with suicide risk.

Further limitations were: Firstly, the study was undertaken at a single prison, with a significant remand population, which may limit the generalising to other prison types and sentenced prisoners at later stages in their imprisonment. Secondly, this study was undertaken in an adult male establishment and as such there will be limitations in its application to younger male and female prisoners. However, there were similarities in the emotional experience connected with self-harm for the male participants in this study and female prisoners in previous research e.g. managing frustration and anger and less linked to depression (Snow, 2002). The diversification of findings into the female estate should be completed only after further examination has taken place but these linked findings indicate that the cry of pain model may have applicability.

Furthermore, many participants were released from prison during the follow-up period. In addition to ensuring the key risk period was included, the follow-up period of the study was limited to four months as participants were being released

from prison. Although most of the self-harm occurred in the early stages of the follow-up period, an unknown number of participants may have been misplaced within the non-self-harm group in the prospective study. This is because some participants may have self-harmed had they remained in prison for a longer period thereby reducing the clarity of this analysis. In relation to this issue, all studies of self-harm rely on the self-reporting of incidents of self-harm or for it to be serious enough to be identifiable by others. It is possible in this study that some participants self-harmed in prison or had previously self-harmed without reporting it; it should be considered whether this group may be different from those who report their behaviour. The cry of pain model, and by extension this study, assumes that the process for those who report self-harm is the same for those who do not report their behaviour. Although some small number of misplacement of participants into a non-self-harm group may have occurred, the support for the model and the differences between the groups who did disclose self-harm indicates that the impact of this group may not be significant. If there was an impact in this study, it could be purported that the strength of the results would only be increased by being able to more clearly define the groups. The findings identified for the previous and future self-harm groups therefore remain strongly supported.

Finally, this section will consider the differences between analyses and the implications for future research. The findings indicate a somewhat different pattern of predictors between previous and prospective self-harm groups. These both raise possible limitations of retrospective studies as well as having implications of future

research. These findings also indicate that although the cry of pain model is supported for both previous and future self-harm behaviour, the role of entrapment, defeat, depressive feelings and locus of control are different between these groups. Neither of these groups was assessed immediately before or after self-harm had occurred. However, the findings indicate that there are differences between previous self-harmers (approximately 23% of the sample) and those who self-harm in prison (approx 6.7% of the sample) and that those who have harmed themselves previously but do not self-harm in prison require additional consideration as to whether risk and protective factors have a differing role to play.

Furthermore, the pattern of findings indicate that participants who previously self-harmed are less affected by defeat and maintain a more internal LOC when entering prison when compared to prisoners who did not self-harm. Although 13 (24.5%) went on to self-harm in prison, 40 (75.5%) did not and since the pattern for those prisoners who did engage in self-harm showed a strong role for higher levels of defeat and external locus of control, these two elements warrant further exploration as to their role within a prison environment and whether maintaining an internal LOC provides some protective element for previous self-harmers. The process by which an individual is prone to feelings of defeat is not yet clear from the research or how best to intervene to reduce the sense of defeat. This is an area which requires further consideration in order to develop interventions, both individual and environmental to improve a low sense of defeat. The results in this study also show that new prisoners have strengths in comparison to some other

groups indicating the potential presence of other protective factors with greater perceived social support than a psychiatric inpatient sample. The findings regarding LOC, perceived social support and defeat warrant further investigation as to the protective elements they may hold in adjusting to imprisonment.

5.10 EVALUATION OF MEASURES

Another potential limitation of the study includes the use of measures which have not been previously utilised on a UK prison sample; and this section will complete an evaluation of the measures for this population. Due to unique characteristics of prison, some more widely used measures would not have been appropriate for the population studied due to the content of questions (e.g. sexual relationships) or because they have been shown to lack specificity within this population (e.g. Beck's Depression Inventory, Boothby & Durham, 1999) (see sections 3.5.2-3.5.9 for details). The comparison therefore between some concepts used within this study with previously published concepts could potentially be different. For example, the relevance and symptoms of depression within a prison environment may include some unique characteristics and others may not be as relevant. This study has considered the norms and factor structure for this population, which has largely shown all measures to be applicable to the population with some minor adjustment. As suggested in section 5.7.3, the findings indicate that consideration is needed for the combination of some of the scales or concepts in relation to defeat and entrapment, for a prison population. The factor structure of the Entrapment Scale for example, is not supported within this population, but when

the wider consideration of factors of entrapment are brought together, there remains a strong case for external and internal entrapment as separate factors. This factor structure requires additional research and consideration within a prison population to aid the identification of the factors relevant for this population.

To allow for the consideration of various possible interpretations of the less clear concepts within the cry of pain model, a range of measures were chosen related to how they would manifest with this population (e.g. entrapment). The results indicated that certain measures did not predict self-harm or suicide within this population. This included results obtained with the Resilience Scale and approach CRI Scales both of which showed poorer than expected predictive power across the analyses. This raises questions regarding whether the measures were adequate to measure the key concepts or whether the key concepts were not being germane within this population. There are thus two alternative conclusions which may be suggested by the results. Firstly, the scales may not be suitable for identifying resilience and approach coping in this population. Alternatively, resilience or approach coping as concepts do not distinguish those who do engage in self-harm from the generally vulnerable population in prison and so cannot be considered a key protective factor within this population. The CRI is limited as it does not consider the effectiveness of the coping strategies or the perception of effectiveness that the individual has of them. There are two possible avenues by which coping strategies may provide a protective effect for the individual: Firstly, the belief in effective coping strategies may impact on the perception of

entrapment as confident individuals may believe an escape is possible; Secondly, if the coping strategies utilised are employed effectively the situation may change and impact on the negative emotional experience. Follow-up research should consider these findings as specific approach coping strategies were not predictive of self-harm or suicide risk. Research could explore whether this may be due to one of the above protective effects not measured in this study. Future research should also consider the use of alternative measures to test their utility within this population and what aspects of resilience or coping style may be most relevant to provide protection for risk of self-harm.

5.10.1 Summary of evaluation of the measures

This study has considered the norms and factor structure for this population (sections 4.2.1 and 4.3), which has largely shown the measures to be applicable to the population; with the need for further consideration of the factor structure of the Entrapment Scale along with the Defeat Scale and Depression and Hopelessness sub-scales of the DHS. The possibility of a factor structure which combines aspects of scales to identify external and internal entrapment for this population was also discussed and should be considered. Some scales were not as predictive as would be hypothesised by previous research (Resilience Scale, DHS-hopelessness and CRI). These scales may require additional consideration to be given for their use within this population and consider whether they are valid for use in measuring the constructs. Few questions have been raised throughout the analysis on the Locus of Control of Behaviour (LCB) and Perceived Stress Scale (PSS) and their use with this

population is strongly supported. In addition, the DHS-suicide critical item scale has shown to be strongly relevant within the prediction of future engagement in self-harm and as such a strong case is made for further analysis of the use of this scale in the prediction of self-harm in prison.

5.11 CONCLUSION

This study considered the utility of the cry of pain model in the prediction of self-harm and suicidal behaviour within a local prison environment. The study included retrospective, current and prospective analysis with a strong methodology with almost all prisoners entering the study prison being offered the opportunity to participate. This is the first time that a study has considered the applicability of the cry of pain model on self-harm as well as suicide risk. This study has considered the norms and factor structure for this population which has largely shown the measures to be applicable to a male adult population, confirming the use of these measures in this study.

The findings overall support the hypotheses that the cry of pain model has applicability in the prediction of self-harm within a male prison population. The findings provide strong support of the presence of all four key elements of the model as predictive of future engagement in self-harm within prison. The findings therefore support the utility of the cry of pain model as providing a robust theoretical underpinning for risk assessment and intervention for self-harm prevention. These findings also expand the knowledge of the cry of pain model to

the area of self-harm, as previous research largely focused on suicide risk and depression. There is mixed support for the model's link with suicide risk although there is evidence of the presence of some key aspects. It is suggested that the measure for suicide risk utilised in this study may not be sufficiently predictive for the model to be fully tested; although it is a reasonable test for key aspects of risk, the model should be further tested with this population. The model is somewhat supported in identifying participants who had previously self-harmed although the retrospective nature of the analysis may not identify all dynamic risks. Support for the model in both the retrospective and prospective analysis confirms the need to continue to measure and assess risk on an ongoing basis. The similarities and support for a single model across the analysis provides some confirmation for the proposition that self-harm and suicidal behaviour are part of a continuum of behaviour.

Comparative normative analysis has shown that this population is significantly more vulnerable than a general community sample. This supports previous research that the prison population is more vulnerable than other populations and suggest that this population is at risk on many previously identified measures of suicide and self-harm risk (e.g. perceived stress, resilience, feelings of defeat, entrapment, depression and hopelessness). Positively, this normative comparison also suggests that new prisoners have strengths in comparison to some other groups indicating the presence of potential protective factors. A protective role is suggested for greater perceived social support within self-harm and suicide; with the

development of esteem and respect that is felt from others and closeness of those relationships as an area useful for future research and intervention. The study also provides evidence of the possible protective capabilities of an internal locus of control. The development of knowledge of these areas may aid intervention strategies. It was not identified that resilience or most generalised coping strategies affected the likelihood of self-harm or suicide risk, although further consideration of the style of coping used when self-harm is the outcome, may provide a more fruitful avenue for risk and protective factors.

The model distinguishing the previous self-harming participants from non prior self-harmers provide key indicators of longstanding and robust factors which may place these individuals at greater vulnerability of self-harm on coming into prison. It is suggested that these patterns of emotion and thought, could be linked to the 'scripts' or 'schemas' referred to in the literature, with these scripts being activated with different moods. This script may be considered a vulnerability factor which could be described as the cry of pain experience, which when at a certain level and containing certain elements increase the likelihood of future self-harm behaviour. The presence of a pattern or 'script' is also supported by the finding that suicide risk is increased with repeated times in prison. In addition, the suicide critical item scale was also found to be a very strong predictor of future self-harm and may provide important information regarding the content of the 'script'. Understanding this pattern or 'script' may allow for the development of new interventions to

reduce the likely full activation of any ‘scripts’ or ‘schema’ which link to suicide or self-harm.

Questions have been raised during the discussion regarding the factor structure for aspects of the cry of pain model, in particular the suggestion that there are two parallel systems in relation to the defeat and entrapment aspects of the model. The first was identified within previous self-harmers and indicated a group which feels more trapped by their own thoughts and emotions than external forces. Crucially many have maintained the belief that there is still opportunity for change (high entrapment (on Entrapment Scale), internal LOC, greater feelings of depression, low defeat). The second system, it is suggested, predicts future engagement in self-harm with feelings of being overwhelmed by external forces rather than by themselves (external LOC, high defeat, less feelings of depression). The internal/external factor structure of the Entrapment Scale was not supported within this population, but when the wider consideration of factors of entrapment are brought together, there remains a strong case for external and internal entrapment as separate factors.

In addition to the possible interlinked structure of the Entrapment Scale, LCB, Defeat Scale and DHS-depression, some scales may require additional consideration as they were not as predictive as hypothesised (Resilience scale, DHS-hopelessness and Coping Responses Inventory). These scales may require consideration within this population on whether they are valid for use in measuring constructs. Fewer

questions have been raised throughout the analysis on the LCB Scale and PSS and their use with this population is supported. In addition, the DHS-suicide critical item scale has shown to be strongly relevant within the prediction of future engagement in self-harm and as such a strong case is made for further analysis of the use of this scale in the prediction of self-harm in prison.

In relation to risk assessment within prison, the results indicate there are two patterns which should flag a concern to prison staff, warranting further investigation of risk of self-harm or suicide. Firstly, the presence of a combination of a high suicide risk scale score, high stress, poor social support and one or other of defeat and entrapment. Secondly, the presence of depressed affect with poor support and previous imprisonment. The current prison assessments may be enhanced by the addition of the provision of standard questions linked with the cry of pain model aspects, their presence, strength and including consideration of the individual 'script' or 'schema'. The use of the cry of pain measures improves the identification those prisoners who will self-harm in prison by a notable amount (up to 17%) above that presently achieved through the ACCT process. This development deserves considerable attention as this improvement in identification would allow for more targeting reducing resource and may reduce the likelihood of self-harm in a significant proportion of prisoners. As this study has confirmed that the cry of pain model is applicable within self-harm as well as suicide risk, a single theory can be applied. Training provided to staff should include an understanding of how to identify and manage these patterns.

The cry of pain model is also supported as a basis for intervention. Although there are still some questions over the exact definitions of defeat and entrapment, the study indicates patterns for which effective intervention can be given. This includes the reduction of stress, the development of a sense of control and being able to make choices to bring about change or development and finally the maintenance and development of positive social support from family and friends. These interventions can, for some, be focussed on individual treatment or therapy. However, to reduce risk across the prisons, provisions are required on an organisational level and can include reception and induction processes, education and work skills, and supporting family and friends outside as well as peer support within prison. These interventions and strategies require evaluation in relation to the effect they have on the reduction of risk.

To summarise, the cry of pain model is overall supported. Areas for assessment and intervention based on the cry of pain model are considered with suggestions for training and development made. Future research directions from this research would include evaluation of the factor structure of the cry of pain model and the role of 'scripts' within the model. Also discussed was the need for further prison research with different prison populations to further guide assessment and intervention at other stages of imprisonment.

APPENDIX A

PRINCIPAL COMPONENTS ANALYSIS

Table A1: ***KMO and Barlett Test for PCA for the Resilience Scale***

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.935
Bartlett's Test of Sphericity	Approx. Chi-Square	2597.597
	Df	325
	Sig.	.000

***Figure A1*: Scree Plot for PCA for Resilience Scale**

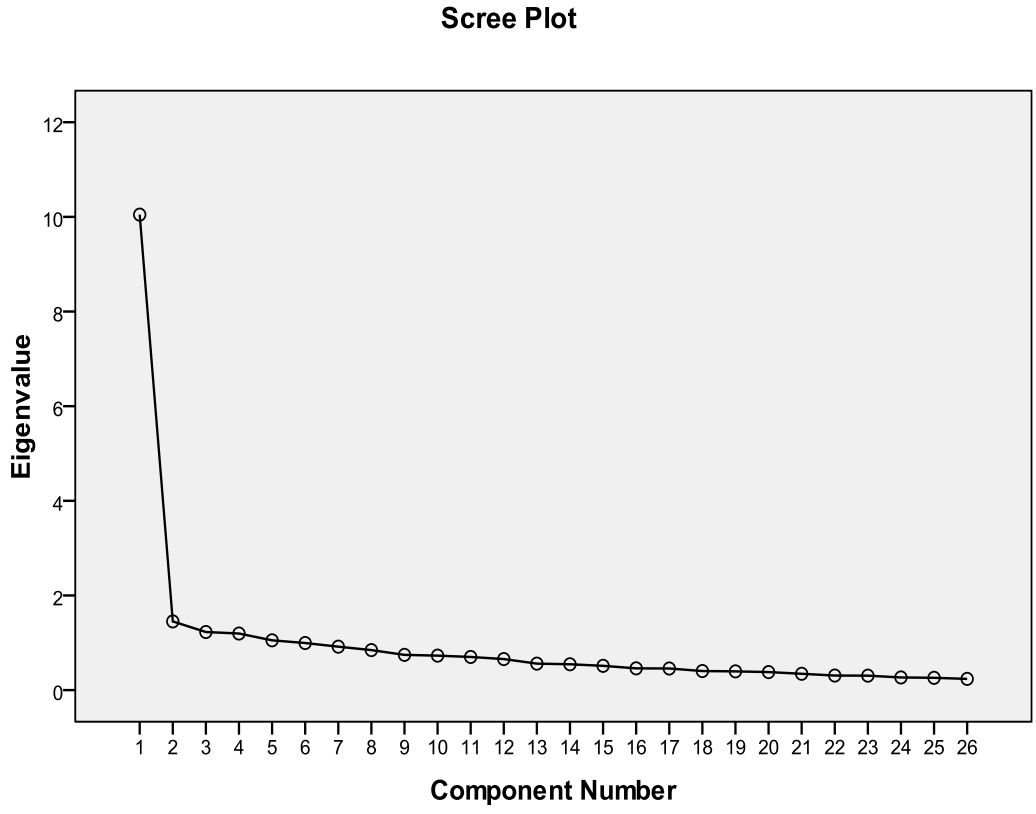

Table A2: ***Total Variance Explained by PCA for the Resilience Scale***

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	10.047	38.643	38.643	10.047	38.643	38.643	7.875
2	1.452	5.584	44.227	1.452	5.584	44.227	3.696
3	1.227	4.721	48.948	1.227	4.721	48.948	5.172
4	1.196	4.599	53.547	1.196	4.599	53.547	1.595
5	1.052	4.046	57.593	1.052	4.046	57.593	4.958
6	.995	3.828	61.421				
7	.918	3.531	64.951				
8	.846	3.252	68.203				
9	.745	2.864	71.068				
10	.729	2.802	73.870				
11	.700	2.694	76.564				
12	.656	2.523	79.087				
13	.560	2.153	81.240				
14	.546	2.100	83.340				
15	.513	1.973	85.313				
16	.460	1.768	87.081				
17	.457	1.756	88.837				
18	.403	1.550	90.388				
19	.396	1.522	91.910				
20	.381	1.464	93.374				
21	.345	1.327	94.702				
22	.308	1.184	95.885				
23	.305	1.174	97.060				
24	.267	1.028	98.088				
25	.260	.999	99.087				
26	.237	.913	100.000				

Table A3: ***Component Correlation Matrix for Resilience Scale: single factor extracted***

	Component 1
RS17	.770
RS19	.746
RS24	.733
RS23	.726
RS21	.724
RS10	.721
RS03	.709
RS15	.695
RS16	.679
RS18	.679
RS04	.658
RS09	.655
RS14	.651
RS02	.648
RS01	.610
RS13	.594
RS07	.580
RS05	.571
RS06	.569
RS08	.562
RS22	.489
RS25	.486
RS20	.444
RS12	.359
RS11	.214

Table A4: ***KMO and Bartlett's Test for PCA for Entrapment Scale***

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.935
Bartlett's Test of Sphericity	Approx. Chi-Square	2597.597
	df	325
	Sig.	.000

Table A5: ***Total Variance Explained for PCA for Entrapment Scale***

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.412	46.328	46.328	7.412	46.328	46.328
2	1.091	6.816	53.144	1.091	6.816	53.144
3	.967	6.043	59.188			
4	.922	5.763	64.951			
5	.792	4.948	69.899			
6	.740	4.624	74.523			
7	.580	3.628	78.150			
8	.555	3.468	81.618			
9	.544	3.400	85.019			
10	.481	3.009	88.028			
11	.436	2.724	90.752			
12	.400	2.498	93.251			
13	.345	2.153	95.404			
14	.289	1.807	97.211			
15	.230	1.438	98.650			
16	.216	1.350	100.000			

Table A6: Component Correlation Matrix for PCA Oblimin rotation for Entrapment Scale: single factors extracted

	Component 1
ES16	.793
ES14	.785
ES13	.782
ES12	.752
ES05	.743
ES11	.733
ES04	.721
ES07	.715
ES15	.704
ES06	.688
ES02	.672
ES01	.651
ES10	.636
ES08	.566
ES03	.477
ES09	.393

***Figure A2*: Scree Plot for PCA for Entrapment Scale**

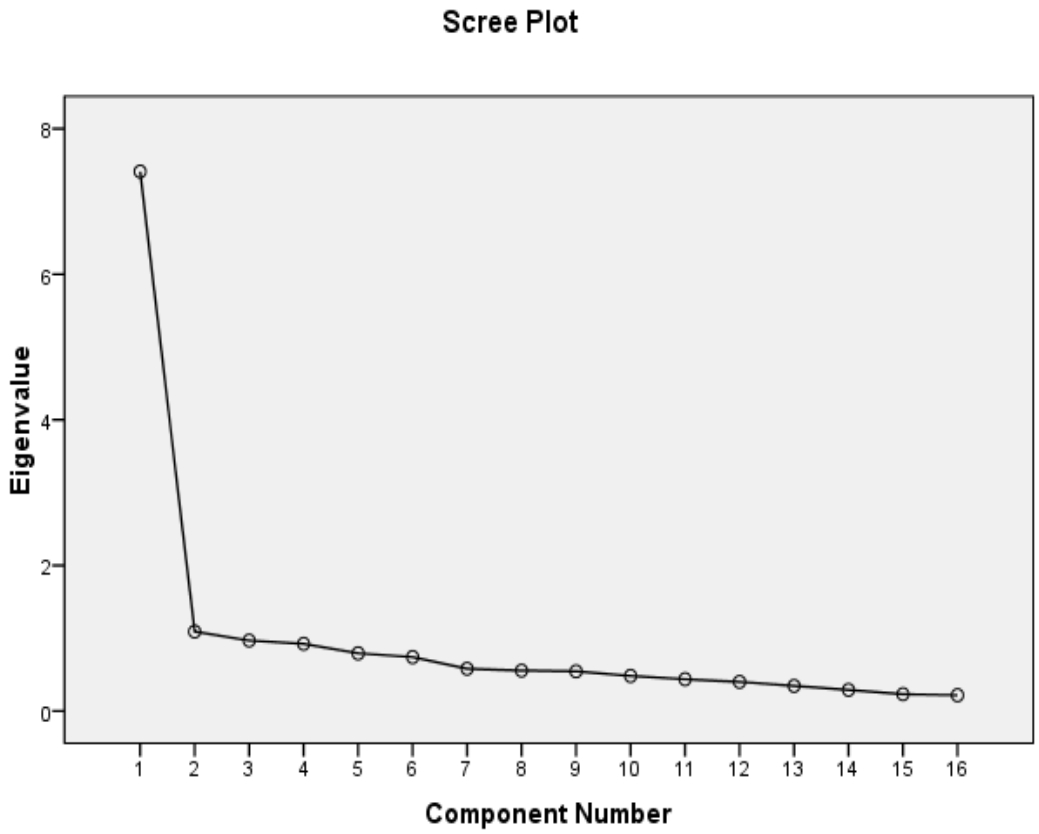

Table A7: ***KMO and Bartlett's Test for PCA for Defeat Scale***

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.937
Bartlett's Test of Sphericity	Approx. Chi-Square	2434.612
	df	120
	Sig.	.000

Table A8: ***Total Variance Explained for PCA for Defeat Scale***

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	8.171	51.068	51.068	8.171	51.068	51.068	7.924
2	1.461	9.129	60.197	1.461	9.129	60.197	3.844
3	.886	5.539	65.736				
4	.848	5.297	71.033				
5	.632	3.948	74.981				
6	.580	3.622	78.603				
7	.549	3.428	82.032				
8	.458	2.862	84.893				
9	.442	2.760	87.653				
10	.373	2.333	89.986				
11	.341	2.134	92.120				
12	.306	1.910	94.030				
13	.285	1.781	95.811				
14	.259	1.618	97.428				
15	.206	1.290	98.718				
16	.205	1.282	100.000				

***Figure A3*: Scree Plot for PCA for Defeat Scale**

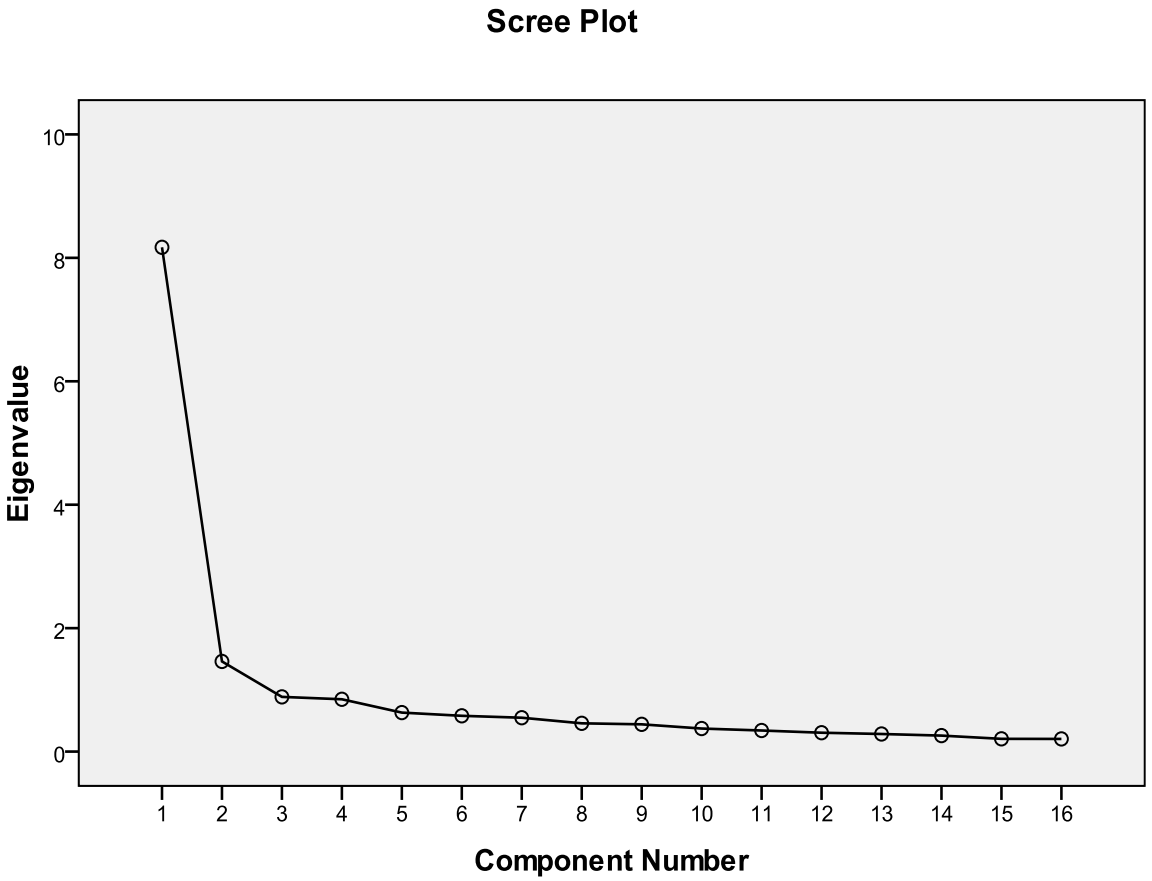

Table A9: ***Pattern and Structure matrix for PCA Oblimin rotation for Defeat Scale: 2 factors extracted***

Pattern Matrix

	Component	
	1	2
DS11	.844	
DS05	.831	
DS06	.820	
DS10	.797	
DS07	.762	
DS08	.759	
DS14	.734	
DS03	.722	
DS12	.688	
DS13	.680	
DS15	.673	
DS16	.627	
DS01	.619	
DS04		.875
DS02		.757
DS09		.674

Structure Matrix

	Component	
	1	2
DS11	.827	.326
DS10	.810	.375
DS12	.802	.595
DS08	.797	.414
DS14	.789	.448
DS07	.783	.378
DS13	.769	.505
DS15	.758	.491
DS05	.745	
DS06	.731	
DS03	.703	
DS16	.697	.433
DS01	.627	
DS04	.355	.865
DS02	.399	.790
DS09	.384	.713

Table A10: ***KMO and Bartlett's Test for PCA for full Coping Responses Inventory (CRI)***

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.828
Bartlett's Test of Sphericity	Approx. Chi-Square	3489.042
	df	1128
	Sig.	.000

***Figure A4*: Scree Plot for PCA for CRI full scale**

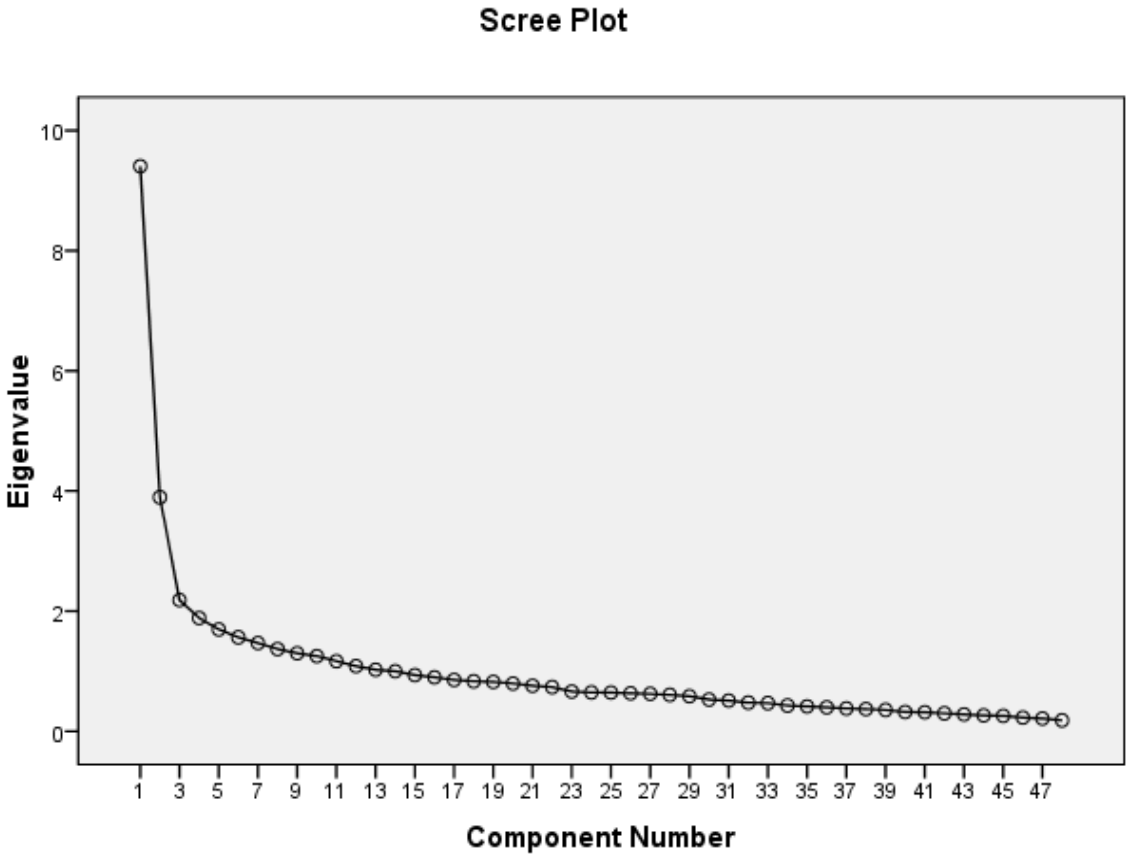

Table A11: ***Total Variance Explained for PCA for full CRI***

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	9.407	19.598	19.598	9.407	19.598	19.598
2	3.896	8.117	27.715	3.896	8.117	27.715
3	2.183	4.549	32.263	2.183	4.549	32.263
4	1.885	3.927	36.190	1.885	3.927	36.190
5	1.696	3.533	39.723	1.696	3.533	39.723
6	1.564	3.258	42.981	1.564	3.258	42.981
7	1.468	3.059	46.040	1.468	3.059	46.040
8	1.368	2.851	48.891	1.368	2.851	48.891
9	1.298	2.704	51.594	1.298	2.704	51.594
10	1.251	2.607	54.201	1.251	2.607	54.201
11	1.167	2.430	56.631	1.167	2.430	56.631
12	1.084	2.258	58.890	1.084	2.258	58.890
13	1.023	2.132	61.022	1.023	2.132	61.022
14	.999	2.081	63.103			
15	.935	1.947	65.050			
16	.898	1.870	66.920			
17	.855	1.782	68.702			
18	.832	1.734	70.436			
19	.822	1.712	72.148			
20	.795	1.656	73.804			
21	.758	1.578	75.382			
22	.735	1.531	76.913			
23	.661	1.378	78.291			
24	.646	1.346	79.637			
25	.643	1.340	80.977			
26	.631	1.314	82.291			
27	.623	1.297	83.588			
28	.606	1.262	84.850			
29	.583	1.215	86.065			
30	.527	1.099	87.164			
31	.512	1.066	88.230			
32	.477	.993	89.223			
33	.469	.976	90.200			
34	.428	.892	91.092			
35	.414	.863	91.955			
36	.398	.829	92.785			
37	.380	.791	93.576			
38	.369	.768	94.344			
39	.355	.740	95.085			
40	.322	.670	95.755			
41	.318	.662	96.417			
42	.299	.623	97.040			
43	.281	.585	97.625			
44	.264	.549	98.174			
45	.257	.535	98.708			
46	.227	.472	99.180			
47	.212	.442	99.622			
48	.181	.378	100.000			

Table A12: ***Component Correlation Matrix for PCA Oblimin rotation for full CRI***

Component	1	2
1	1.000	.254
2	.254	1.000

Table A13: ***Pattern and Structure Matrix for PCA Oblimin matrix for CRI: 2 factors extracted***

Pattern Matrix

	Component	
	1	2
CRI01	.453	
CRI02	.340	.255
CRI03	.491	
CRI04	.596	-.400
CRI05		.534
CRI06	.118	.362
CRI07	.437	
CRI08	-.116	.524
CRI09	.501	.109
CRI10	.538	
CRI11	.579	
CRI12	.614	-.108
CRI13		.568
CRI14		.548
CRI15	.557	-.227
CRI16		.342
CRI17	.374	.221
CRI18	.554	
CRI19	.521	-.114
CRI20	.576	
CRI21	.291	.456
CRI22	.139	.563
CRI23	.445	
CRI24		.458
CRI25	.502	.184
CRI26	.485	
CRI27	.421	
CRI28	.568	
CRI29	.173	.585
CRI30		.491
CRI31	.417	
CRI32	-.109	.548
CRI33	.448	.300
CRI34	.547	.202
CRI35	.652	
CRI36	.583	.168
CRI37	.171	.351
CRI38		.376
CRI39	.433	
CRI40	.181	.351
CRI41	.579	.138
CRI42	.623	
CRI43	.290	
CRI44	.498	.131
CRI45		.519
CRI46	-.136	.642
CRI47	.450	
CRI48	.247	.456

Structure Matrix

	Component	
	1	2
CR101	.436	
CRI02	.404	.341
CRI03	.466	
CRI04	.494	-.249
CRI05		.517
CRI06	.209	.392
CRI07	.454	.179
CRI08		.494
CRI09	.529	.236
CRI10	.542	.151
CRI11	.580	.151
CRI12	.586	
CRI13	.149	.569
CRI14	.147	.550
CRI15	.500	
CRI16	.111	.349
CRI17	.430	.316
CRI18	.557	.152
CRI19	.492	
CRI20	.581	.167
CRI21	.407	.530
CRI22	.282	.598
CRI23	.436	
CRI24		.449
CRI25	.549	.312
CRI26	.485	.124
CRI27	.438	.175
CRI28	.569	.147
CRI29	.321	.629
CRI30	.109	.488
CRI31	.417	.105
CRI32		.520
CRI33	.524	.414
CRI34	.598	.341
CRI35	.672	.244
CRI36	.626	.316
CRI37	.260	.394
CRI38	.164	.394
CRI39	.419	
CRI40	.270	.397
CRI41	.615	.285
CRI42	.602	
CRI43	.311	.157
CRI44	.532	.258
CRI45		.504
CRI46		.608
CRI47	.469	.191
CRI48	.362	.518

Table A14: ***KMO and Bartlett's Test for PCA for CRI Approach Scales***

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.877
Bartlett's Test of Sphericity	Approx. Chi-Square	1531.941
	df	276
	Sig.	.000

Table A15: ***Total Variance Explained For PCA for CRI Approach Scales***

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.044	29.348	29.348	7.044	29.348	29.348	5.842
2	1.574	6.557	35.905	1.574	6.557	35.905	4.427
3	1.331	5.544	41.449	1.331	5.544	41.449	2.775
4	1.244	5.182	46.631	1.244	5.182	46.631	1.294
5	1.206	5.023	51.654				
6	1.127	4.695	56.350				
7	.973	4.054	60.403				
8	.891	3.714	64.118				
9	.858	3.576	67.694				
10	.796	3.317	71.011				
11	.710	2.958	73.969				
12	.670	2.790	76.760				
13	.623	2.596	79.356				
14	.611	2.546	81.902				
15	.574	2.390	84.292				
16	.522	2.175	86.468				
17	.506	2.106	88.574				
18	.477	1.989	90.563				
19	.469	1.953	92.515				
20	.431	1.794	94.309				
21	.401	1.672	95.982				
22	.353	1.470	97.452				
23	.334	1.391	98.843				
24	.278	1.157	100.000				

***Figure A5*: Scree Plot for CRI Approach Scales**

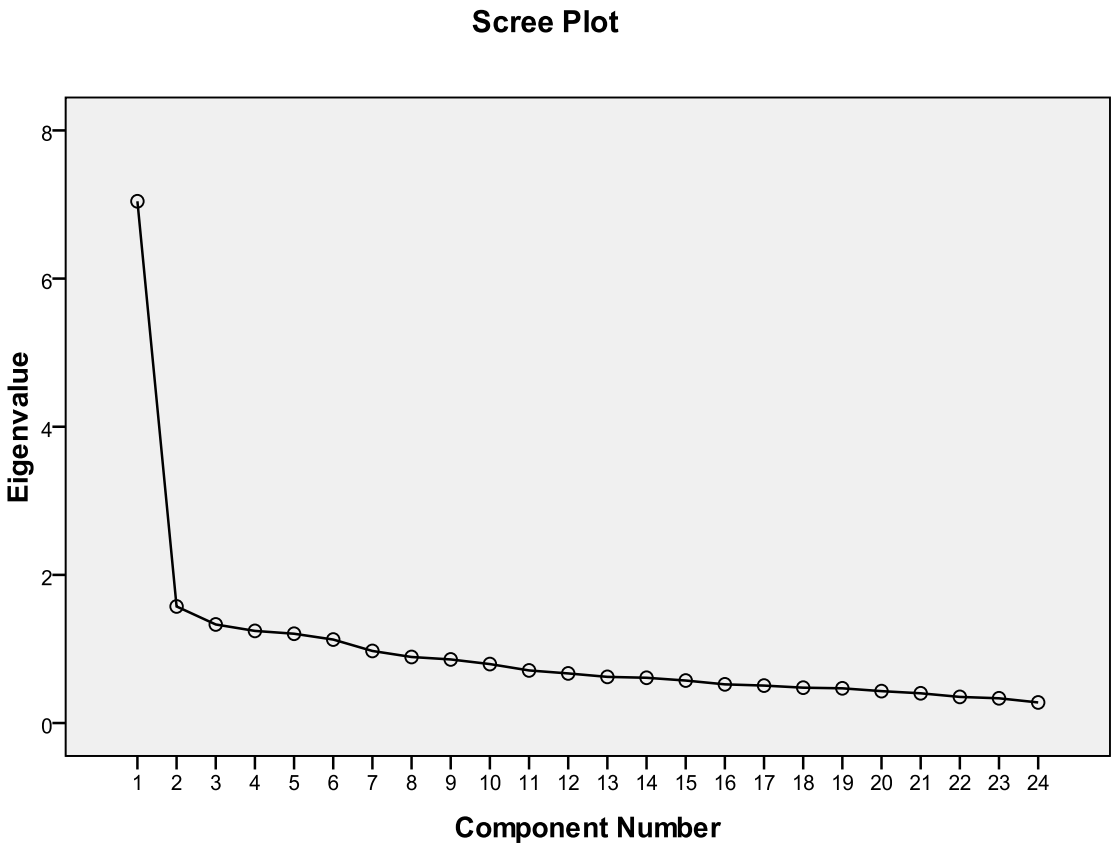

Table A16: ***Pattern and Structure Matrix from SPSS for PCA Oblimin rotation for CRI Approach Scales: 4 factors extracted***

Pattern Matrix

	Component			
	1	2	3	4
CRI26	.759			
CRI41	.648			
CRI09	.628			
CRI33	.568			
CRI36	.568			
CRI28	.546			
CRI10	.538			
CRI25	.531			
CRI18	.524			
CRI34	.523		.413	
CRI42	.431			
CRI04		.742		
CRI01		.677		
CRI03		.606		.307
CRI12		.528		
CRI17		.463		-.377
CRI11		.440		
CRI35	.380	.390		
CRI20		.346		
CRI43			.683	
CRI44	.334		.637	
CRI02		.414	.422	
CRI19			.324	.557
CRI27	.410			.491

Structure Matrix

	Component			
	1	2	3	4
CRI41	.687	.348		
CRI26	.659			
CRI36	.632	.317	.328	
CRI09	.625			
CRI34	.598		.536	
CRI28	.597	.427		
CRI25	.596	.366		
CRI33	.595		.351	
CRI10	.584	.310		
CRI18	.560			
CRI42	.543	.417		
CRI04		.709		
CR101	.300	.658		
CRI12	.429	.625		
CRI03		.617	.375	.321
CRI35	.569	.574	.342	
CRI11	.433	.562	.300	
CRI17	.378	.531		-.351
CRI20	.439	.503	.407	
CRI44	.462		.702	
CRI43			.670	
CRI02		.487	.507	
CRI19	.326	.367	.412	.572
CRI27	.435			.510

Table A17: ***Component Correlation Matrix for PCA Oblimin rotation for CRI Approach Scales: 4 factors extracted***

Component	1	2	3	4
1	1.000	.395	.257	.047
2	.395	1.000	.240	.034
3	.257	.240	1.000	.004
4	.047	.034	.004	1.000

Table A18: ***KMO and Bartlett's Test for PCA for CRI avoidant scales***

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.788
Bartlett's Test of Sphericity	Approx. Chi-Square	1128.880
	df	276
	Sig.	.000

Table A19: ***Total Variance Explained by PCA for CRI Avoidant scales***

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	4.876	20.317	20.317	4.876	20.317	20.317	2.553
2	2.263	9.430	29.746	2.263	9.430	29.746	1.786
3	1.684	7.017	36.764	1.684	7.017	36.764	2.578
4	1.277	5.319	42.083	1.277	5.319	42.083	2.038
5	1.210	5.043	47.126	1.210	5.043	47.126	2.582
6	1.185	4.936	52.062	1.185	4.936	52.062	2.080
7	1.157	4.822	56.884	1.157	4.822	56.884	2.847
8	.972	4.049	60.933				
9	.879	3.662	64.595				
10	.816	3.400	67.995				
11	.794	3.308	71.302				
12	.737	3.070	74.372				
13	.709	2.955	77.328				
14	.682	2.842	80.170				
15	.657	2.738	82.909				
16	.596	2.482	85.390				
17	.559	2.328	87.718				
18	.525	2.186	89.904				
19	.481	2.004	91.909				
20	.463	1.930	93.839				
21	.418	1.742	95.581				
22	.373	1.552	97.133				
23	.357	1.486	98.619				
24	.332	1.381	100.000				

***Figure A6*: Scree Plot for PCA for Avoidant CRI coping scales**

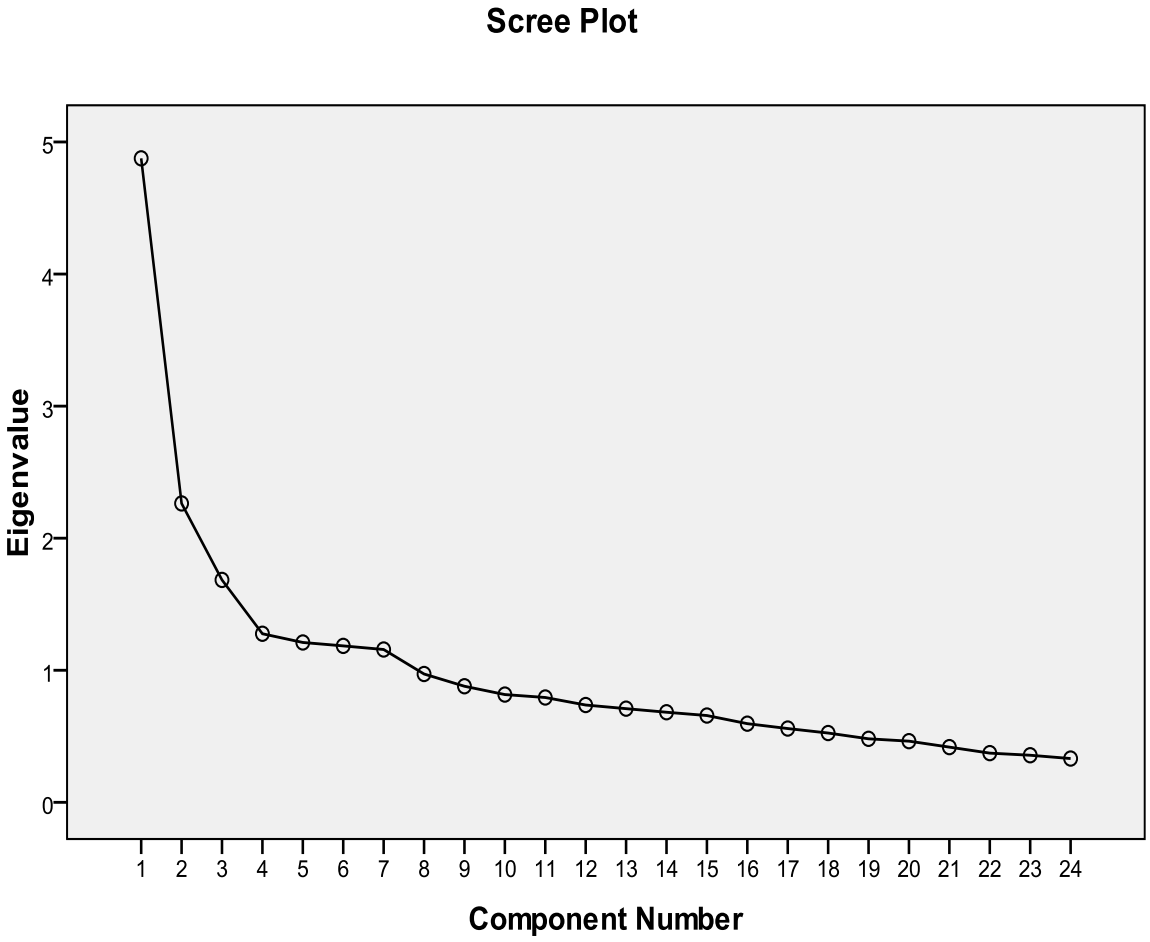

Table A20: ***Pattern and Structure matrix for Oblimin rotation for CRI avoidant scales: 4 factors extracted***

Pattern matrix

	Component			
	1	2	3	4
CRI29	.672			
CRI21	.626			
CRI22	.616			
CRI30	.611			
CRI14	.573			
CRI37	.498			
CRI06	.466			
CRI38	.444			
CRI07	.323			
CRI15		.743		
CRI23		.652		
CRI31		.580		
CRI39		.576		
CRI47		.574		
CRI48		.438	.399	
CRI32			.759	
CRI08			.723	
CRI16			.488	
CRI24				
CRI40			.331	
CRI13				.707
CRI45				.626
CRI05				.596
CRI46				.493

Structure Matrix

	Component			
	1	**2**	**3**	**4**
CRI05	.498		.434	
CRI06	.526			
CRI07				.436
CRI08			.717	
CRI13	.675			
CRI14	.594			
CRI15		.717		
CRI16			.548	
CRI21	.484			
CRI22	.636			
CRI23		.666		
CRI24				.532
CRI29	.661			
CRI30	.504			.411
CRI31		.564		
CRI32			.775	
CRI37	.522			
CRI38	.441			
CRI39		.553		
CRI40				.578
CRI45			.479	
CRI46	.508		.443	
CRI47		.600		
CRI48		.465	.536	

Table A21: ***Factor correlation for PCA Oblimin rotation for CRI avoidant scales***

Component	1	2	3	4
1	1.000	.158	.152	.279
2	.158	1.000	.054	.038
3	.152	.054	1.000	.163
4	.279	.038	.163	1.000

Table A22: ***KMO and Bartlett's Test for PCA for SS-A***

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.907
Bartlett's Test of Sphericity	Approx. Chi-Square	2876.107
	df	253.000
	Sig.	.000

Table A23: ***Total Variance Explained for PCA for SS-A***

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	9.087	39.507	39.507	9.087	39.507	39.507	7.115
2	2.289	9.951	49.458	2.289	9.951	49.458	7.087
3	1.675	7.283	56.741	1.675	7.283	56.741	3.082
4	1.155	5.021	61.762				
5	.930	4.045	65.807				
6	.894	3.888	69.695				
7	.769	3.342	73.037				
8	.697	3.031	76.068				
9	.621	2.698	78.766				
10	.591	2.569	81.335				
11	.554	2.409	83.745				
12	.527	2.293	86.038				
13	.495	2.153	88.191				
14	.409	1.777	89.968				
15	.368	1.598	91.566				
16	.357	1.551	93.117				
17	.325	1.412	94.529				
18	.315	1.368	95.897				
19	.255	1.108	97.005				
20	.224	.974	97.979				
21	.184	.802	98.780				
22	.156	.677	99.457				
23	.125	.543	100.000				

***Figure A7*: Scree Plot for PCA for SS-A**

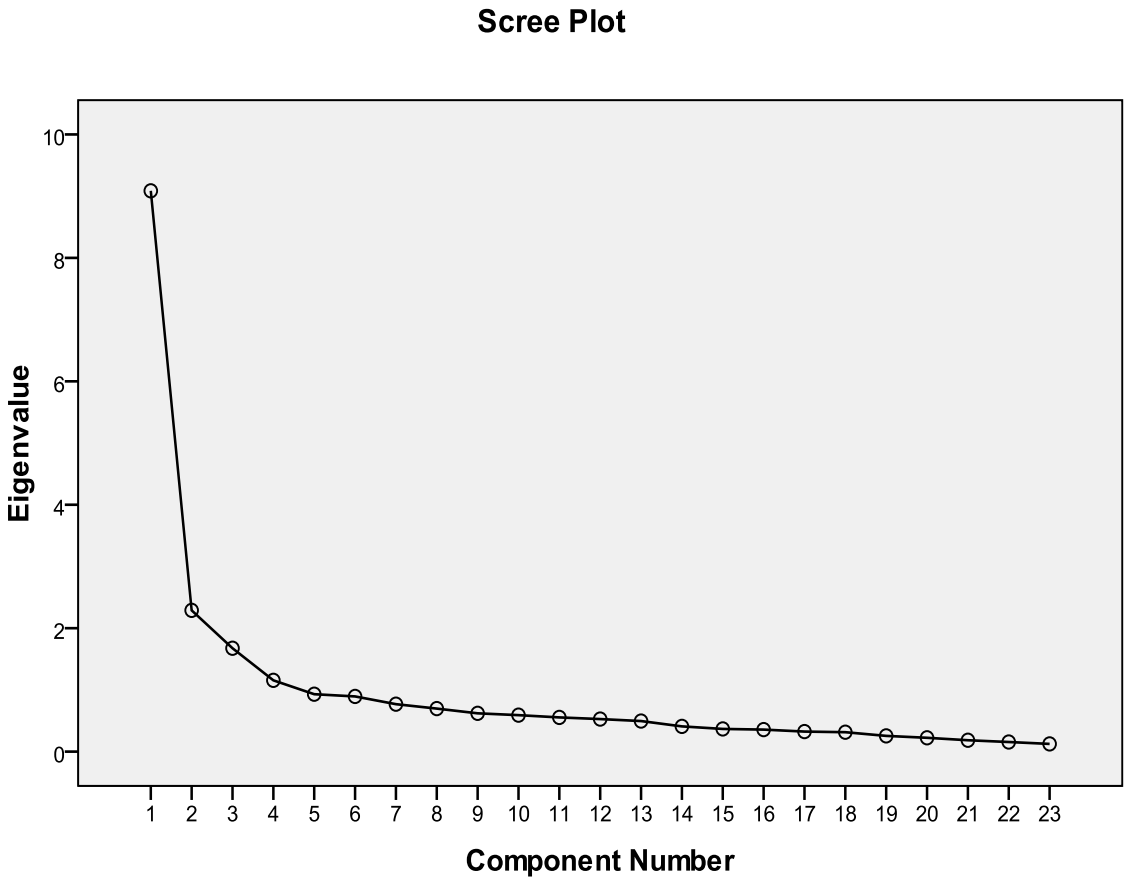

Table A24: ***Factor correlation matrix for PCA Oblimin rotation for SS-A 3 factor solution***

Component	1	2	3
1	1.000	-.455	.259
2	-.455	1.000	-.233
3	.259	-.233	1.000

Table A25*: Pattern and Structure Matrix for PCA Oblimin rotation for SS-A*

Pattern Matrix

	Component		
	1	2	3
SS-A01	.321	-.424	
SS-A02	.804		.131
SS-A03	.135		.565
SS-A04	.829		.124
SS-A05	.442	-.311	.119
SS-A06		-.676	
SS-A07	.814		
SS-A08	.467	-.364	
SS-A09	.789		
SS-A10	-.222	-.426	.473
SS-A11	.671		
SS-A12	.594	-.201	
SS-A13		.139	.716
SS-A14	.473	-.446	-.188
SS-A15		-.845	
SS-A16		-.869	
SS-A17	.200	-.667	
SS-A18	.680	-.165	
SS-A19		-.887	
SS-A20	.301	-.422	
SS-A21		-.165	.638
SS-A22	.220		.686
SS-A23		-.862	

Structure Matrix

	Component		
	1	2	3
SS-A01	.535	-.589	.263
SS-A02	.794	-.299	.316
SS-A03	.280	-.190	.599
SS-A04	.834	-.346	.324
SS-A05	.615	-.540	.306
SS-A06	.360	-.711	.261
SS-A07	.850	-.418	.308
SS-A08	.606	-.553	.107
SS-A09	.773	-.306	.243
SS-A10	.094	-.435	.515
SS-A11	.651	-.272	.136
SS-A12	.702	-.487	.267
SS-A13	.121	-.028	.683
SS-A14	.627	-.617	.039
SS-A15	.430	-.867	.221
SS-A16	.388	-.873	.258
SS-A17	.509	-.763	.229
SS-A18	.750	-.469	.195
SS-A19	.399	-.878	.152
SS-A20	.498	-.563	.197
SS-A21	.297	-.339	.691
SS-A22	.378	-.216	.733
SS-A23	.320	-.822	.128

Table A26: ***KMO and Bartlett's Test for PCA for DHS full scale***

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.925
Bartlett's Test of Sphericity	Approx. Chi-Square	4122.705
	df	741
	Sig.	.000

***Figure A8*: Scree Plot of PCA for DHS Scale**

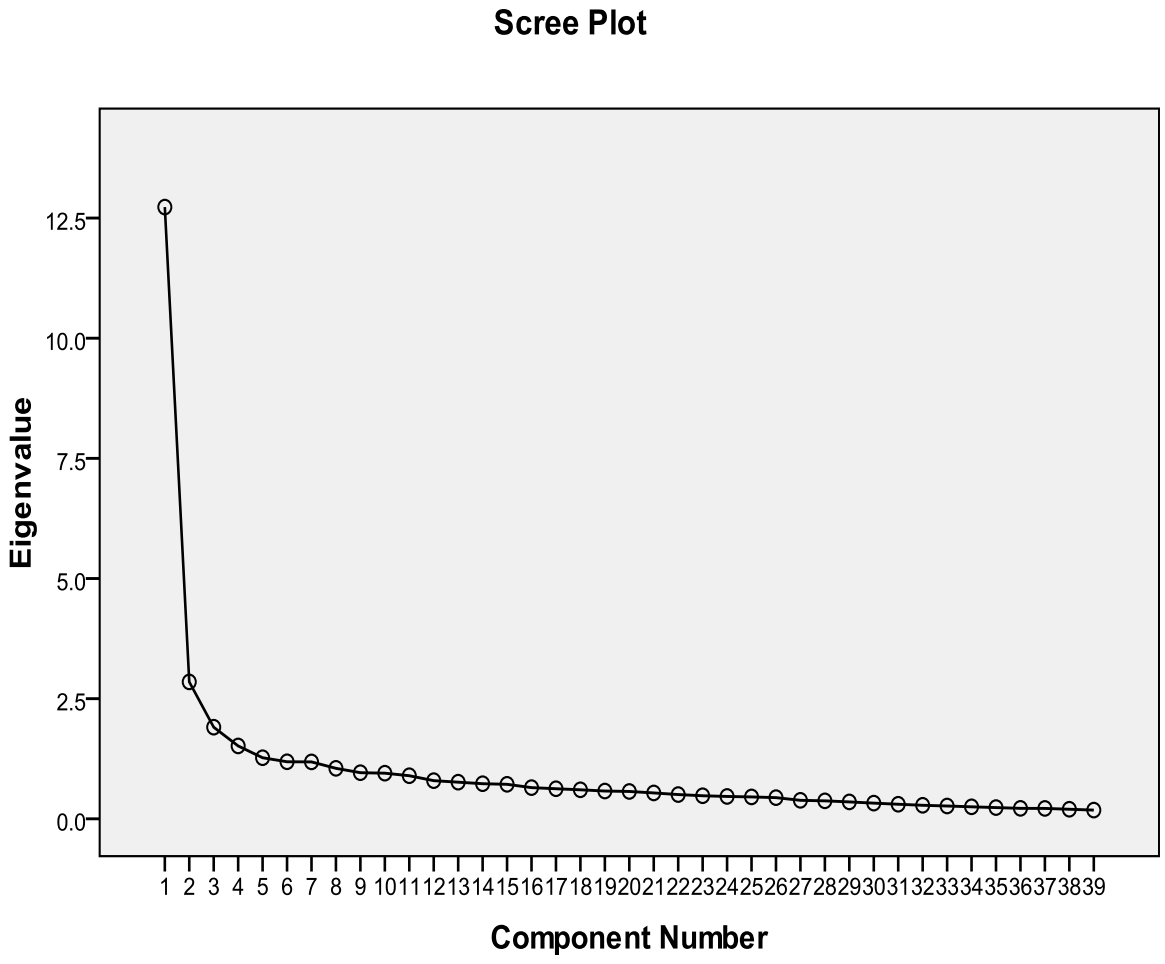

Table A27: ***Total Variance Explained by PCA for DHS Scale***

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.728	32.637	32.637	12.728	32.637	32.637
2	2.849	7.304	39.941	2.849	7.304	39.941
3	1.906	4.888	44.829	1.906	4.888	44.829
4	1.516	3.888	48.717	1.516	3.888	48.717
5	1.271	3.259	51.976	1.271	3.259	51.976
6	1.187	3.044	55.019	1.187	3.044	55.019
7	1.184	3.037	58.056	1.184	3.037	58.056
8	1.050	2.693	60.749	1.050	2.693	60.749
9	.960	2.461	63.210			
10	.949	2.434	65.645			
11	.896	2.299	67.943			
12	.794	2.036	69.979			
13	.762	1.954	71.934			
14	.730	1.873	73.806			
15	.718	1.841	75.648			
16	.649	1.664	77.312			
17	.626	1.605	78.916			
18	.604	1.548	80.465			
19	.578	1.482	81.947			
20	.569	1.459	83.407			
21	.539	1.381	84.787			
22	.505	1.294	86.082			
23	.480	1.231	87.312			
24	.465	1.193	88.506			
25	.456	1.168	89.674			
26	.441	1.130	90.804			
27	.385	.987	91.791			
28	.374	.959	92.749			
29	.352	.902	93.651			
30	.326	.837	94.488			
31	.303	.777	95.265			
32	.282	.722	95.988			
33	.267	.684	96.671			
34	.250	.640	97.312			
35	.234	.600	97.911			
36	.218	.558	98.469			
37	.216	.555	99.024			
38	.199	.511	99.535			
39	.181	.465	100.000			

Table A28: ***Pattern and structure matrix for PCA Oblimin rotation for DHS scale: 3 factors extracted***

Pattern Matrix

	Component		
	1	2	3
DHS02	.746		
DHS07	.741		
DHS26	.708		
DHS19	.707		
DHS33	.698		
DHS18	.678		
DHS30	.648		
DHS03	.641		
DHS35	.631		
DHS01	.599		
DHS23	.590		
DHS21	.587		
DHS10	.576		
DHS06	.544		
DHS11	.536		
DHS27	.467		
DHS13	.435		
DHS15	.372		
DHS29	.316		
DHS34		.803	
DHS28		.794	
DHS32		.779	
DHS36		.700	
DHS20		.697	
DHS24		.639	
DHS16		.614	
DHS39		.611	
DHS12		.486	
DHS38		.380	
DHS08		.360	
DHS22			.714
DHS09			.581
DHS25			.509
DHS14	.347		.492
DHS17			.485
DHS31	.368		.485
DHS37	.389		.416
DHS05	.365		.413
DHS04			.338

Structure Matrix

	Component		
	1	2	3
DHS19	.791	.411	.412
DHS18	.758	.417	.358
DHS35	.743	.409	.464
DHS02	.739		.305
DHS01	.729	.472	.418
DHS30	.690	.309	.334
DHS33	.688	.310	
DHS07	.682		
DHS26	.666		
DHS03	.661		
DHS10	.658	.385	.318
DHS21	.649	.366	
DHS23	.647	.341	
DHS37	.582	.406	.580
DHS06	.570		
DHS11	.528		
DHS13	.490		
DHS15	.472		.370
DHS27	.452		
DHS29	.392		
DHS28	.417	.824	
DHS34	.325	.787	
DHS36	.449	.764	
DHS20	.437	.763	
DHS32	.326	.763	
DHS16	.566	.750	.307
DHS24	.425	.705	
DHS39		.596	
DHS38	.465	.534	.390
DHS12		.444	.331
DHS08		.422	.338
DHS22			.710
DHS31	.498		.587
DHS25	.351		.583
DHS14	.468		.581
DHS09			.558
DHS05	.491		.527
DHS17			.513
DHS04	.392	.434	.465

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Table A29: ***KMO and Bartlett's Test for PCA for LCB***

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.795
Bartlett's Test of Sphericity	Approx. Chi-Square	1171.697
	df	136.000
	Sig.	.000

Table A30: ***Total Variance Explained for PCA for LCB***

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	4.408	25.930	25.930	4.408	25.930	25.930	4.139
2	3.006	17.680	43.610	3.006	17.680	43.610	3.346
3	1.538	9.047	52.657				
4	1.098	6.456	59.113				
5	.991	5.829	64.942				
6	.788	4.635	69.577				
7	.744	4.376	73.953				
8	.657	3.866	77.819				
9	.600	3.529	81.348				
10	.528	3.106	84.454				
11	.479	2.817	87.271				
12	.455	2.679	89.950				
13	.429	2.525	92.474				
14	.396	2.330	94.804				
15	.351	2.065	96.869				
16	.286	1.681	98.550				
17	.247	1.450	100.000				

***Figure A9*: Scree Plot for PCA for LCB**

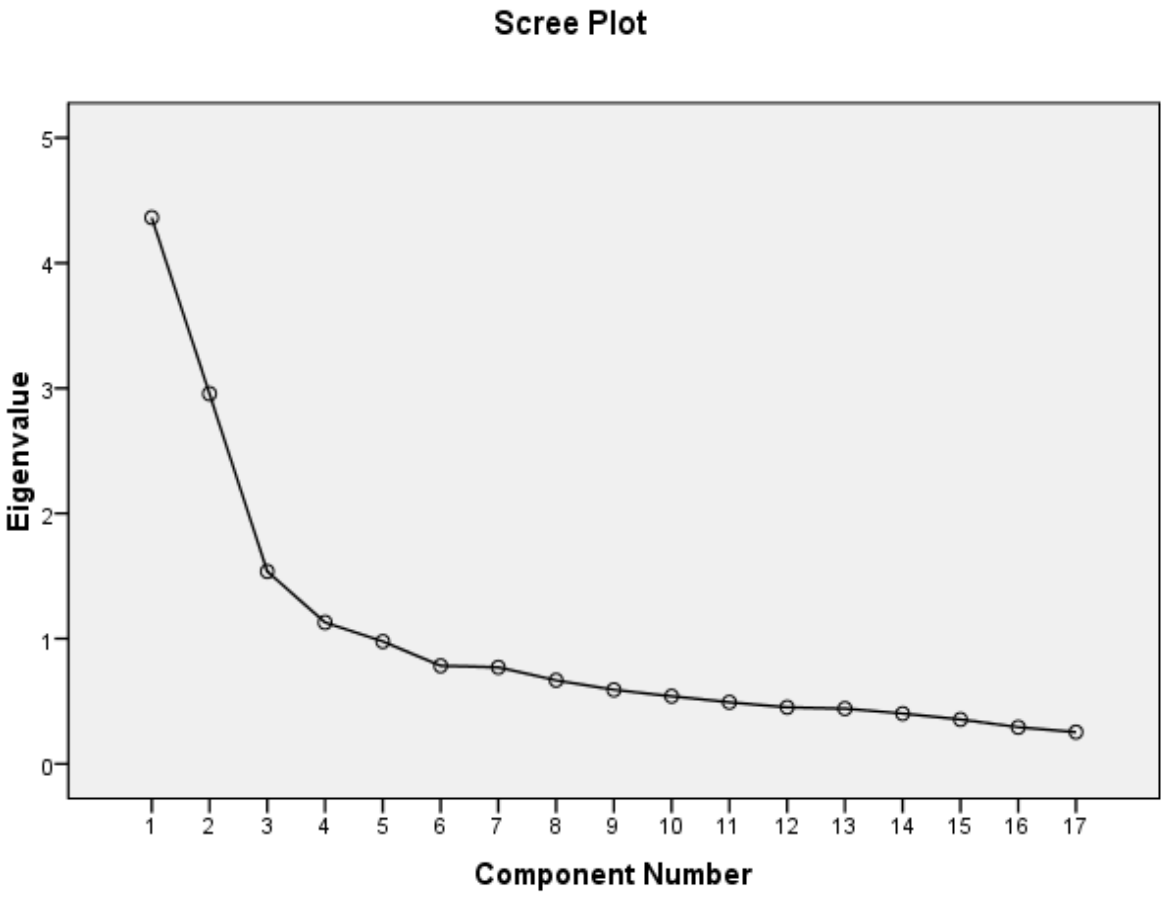


Table A31: *Component Correlation Matrix for PCA Oblimin Rotation for LCB*

Component	1	2
1	1.000	.062
2	.062	1.000

Table A32: ***Pattern and Structure matrix for PCA Oblimin rotation for LCB***

Pattern Matrix

	Component	
	1	2
LC01		.657
LC02	.547	
LC03	.614	
LC04	.533	
LC05		.674
LC06	.677	
LC07		.502
LC08		.697
LC09	.573	
LC10	.644	
LC11	.634	
LC12	.717	
LC13		.644
LC14	.616	
LC15		.532
LC16		.786
LC17	.736	

Structure Matrix

	Component	
	1	2
LC01		.664
LC02	.528	
LC03	.603	
LC04	.524	
LC05		.679
LC06	.685	
LC07		.500
LC08		.697
LC09	.591	
LC10	.642	
LC11	.643	
LC12	.730	
LC13		.643
LC14	.613	
LC15		.521
LC16		.797
LC17	.745	

Table A33: ***KMO and Bartlett's test for PCA for PSS***

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.872
Bartlett's Test of Sphericity	Approx. Chi-Square	1095.159
	df	91
	Sig.	.000

Table A34: ***Total Variance Explained for PCA for PSS***

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	4.705	33.604	33.604	4.705	33.604	33.604	3.987
2	2.539	18.135	51.739	2.539	18.135	51.739	3.655
3	.809	5.776	57.516				
4	.774	5.528	63.044				
5	.735	5.253	68.297				
6	.664	4.742	73.039				
7	.631	4.508	77.547				
8	.587	4.193	81.740				
9	.515	3.680	85.420				
10	.494	3.530	88.951				
11	.456	3.260	92.210				
12	.407	2.907	95.117				
13	.396	2.828	97.946				
14	.288	2.054	100.000				

***Figure A10*: Scree plot for PCA for PSS**

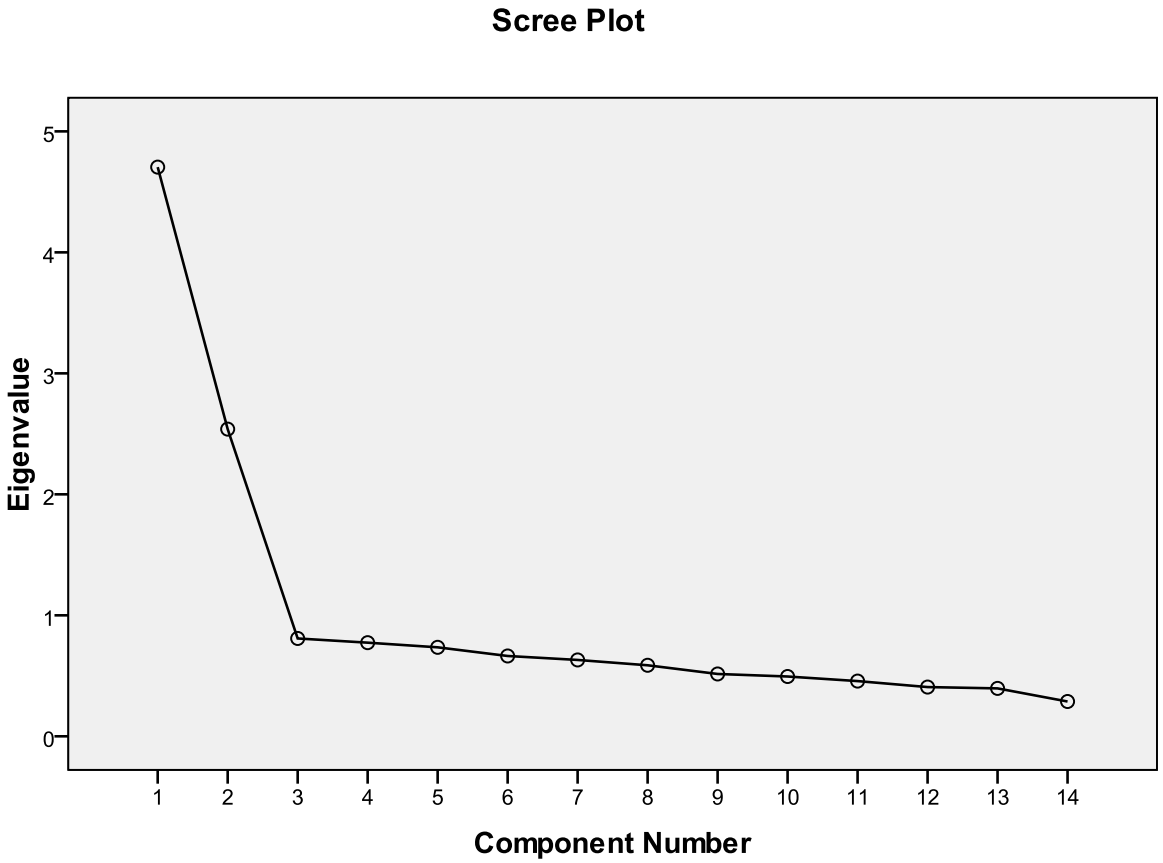


Table A35: ***Pattern and Structure matrix for PCA Oblimin rotation for PSS***

Pattern Matrix

	Component	
	1	2
PSS01		.704
PSS02		.688
PSS03		.761
PSS04	.759	
PSS05	.733	
PSS06	.706	
PSS07	.678	
PSS08		.645
PSS09	.623	
PSS10	.651	
PSS11		.741
PSS12	-.522	.409
PSS13	.702	
PSS14		.723

Structure Matrix

	Component	
	1	2
PSS01		.718
PSS02	.307	.721
PSS03		.770
PSS04	.747	
PSS05	.729	
PSS06	.750	.370
PSS07	.721	.354
PSS08		.651
PSS09	.640	
PSS10	.690	.333
PSS11		.718
PSS12	-.446	.312
PSS13	.692	
PSS14		.743

Table A36: ***Component Correlation Matrix for PCA Oblimin Rotation for PSS***

Component	**1**	**2**
1	1.000	.187
2	.187	1.000

Table A37: ***Means, Standard Deviation, Skewness, Kurtosis and Z-scores of Skewness and Kurtosis for all measures***

Measure		Resilience	Entrapment	Defeat	PSS	CRI: LA	CRI: PR	CRI: SG	CRI: PS	CRI: CA	CRI: AR	CRI: SR	CRI: ED	SSA-family	SS-A friend	DHS-depress	DHS-hopeless	DHS-SCI	LCB
N	Valid	250	249	250	234	213	216	217	213	214	216	211	214	219	223	224	223	223	214
	Missing	16	17	16	32	53	50	49	53	52	50	55	52	47	43	42	43	43	52
Mean		129.78	23.98	24.76	42.36	9.31	10.11	8.71	10.46	9.21	8.94	8.18	7.10	15.82	14.70	7.71	3.97	2.31	33.69
Median		133.00	23.00	23.00	42.0	9.00	10.00	9.00	11.00	9.00	9.00	9.00	7.00	16.00	14.00	7.00	3.00	1.00	34.50
Mode		133.0	.00	22.00	40.0	9.00	14.00	9.00	9.00	8.00	9.00	9.00	8.00	18.00	14.00	3.00	.00	.00	32.50
SD		26.273	16.168	14.015	9.415	4.141	4.217	4.230	4.227	4.187	4.171	4.018	4.094	5.525	4.838	4.865	3.267	3.10	13.412
Variance		690.27	261.4	196.44	88.64	17.15	17.74	17.89	17.83	17.53	17.39	16.14	16.76	30.53	23.41	23.674	10.671	9.663	179.8
Skewness		-1.154	.437	.397	-.193	-.327	-.329	.060	-.295	-.132	-.122	-.112	.279	.660	.326	.219	.491	1.354	-.174
Std. Error of Skewness		.154	.154	.154	.159	.167	.166	.165	.167	.166	.166	.167	.166	.164	.163	.163	.163	.163	.166
Kurtosis		1.794	-.627	-.370	.014	-.418	-.540	-.686	-.510	-.540	-.388	-.468	-.401	-.025	-.393	-1.066	-1.084	.725	-.516
Std. Error of Kurtosis		.307	.307	.307	.317	.332	.330	.329	.332	.331	.330	.333	.331	.327	.324	.324	.324	.324	.331
Range		136.00	64.00	64.00	46.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	24.00	21.00	20.00	10.00	12.00	69.00
z-score skewness		7.49	2.84	2.56	1.21	1.96	1.98	0.375	1.76	0.79	0.73	0.73	1.68	4.02	2	1.34	3.01	8.03	1.05
z-score kurtosis		5.8	2.04	1.2	0.04	1.26	1.64	2.08	1.54	1.63	1.18	1.41	1.21	0.07	1.21	3.29	3.34	2.24	1.56

APPENDIX B

HISTOGRAM AND P-P PLOTS FOR ALL MEASURES ON ANALYSIS OF NORMALITY

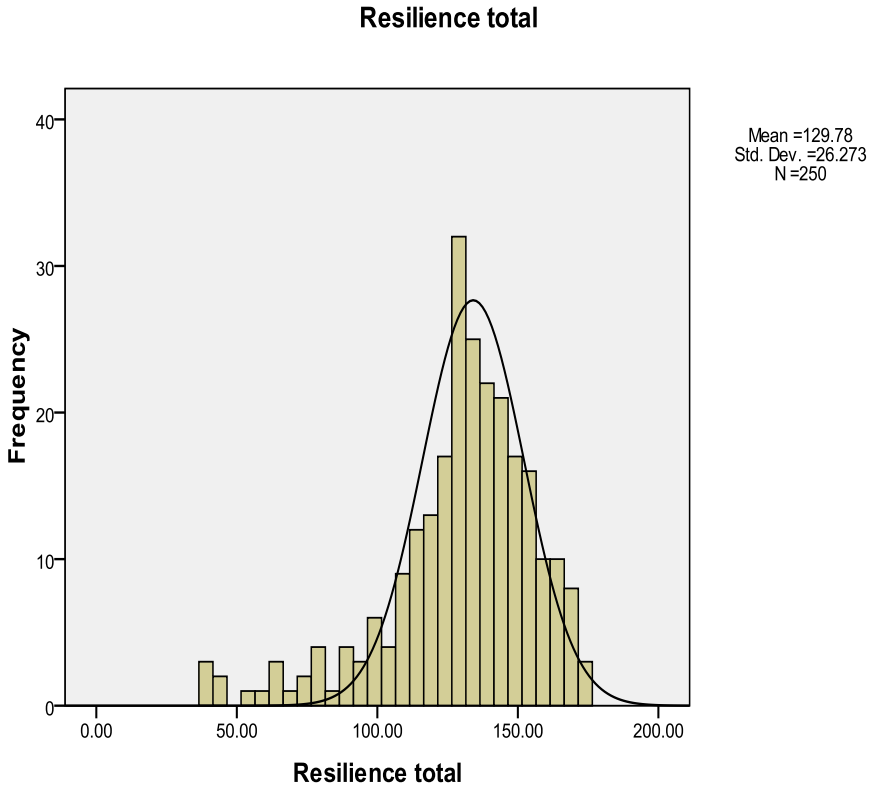


***Figure B1*: Normality Histogram for Resilience Scale**

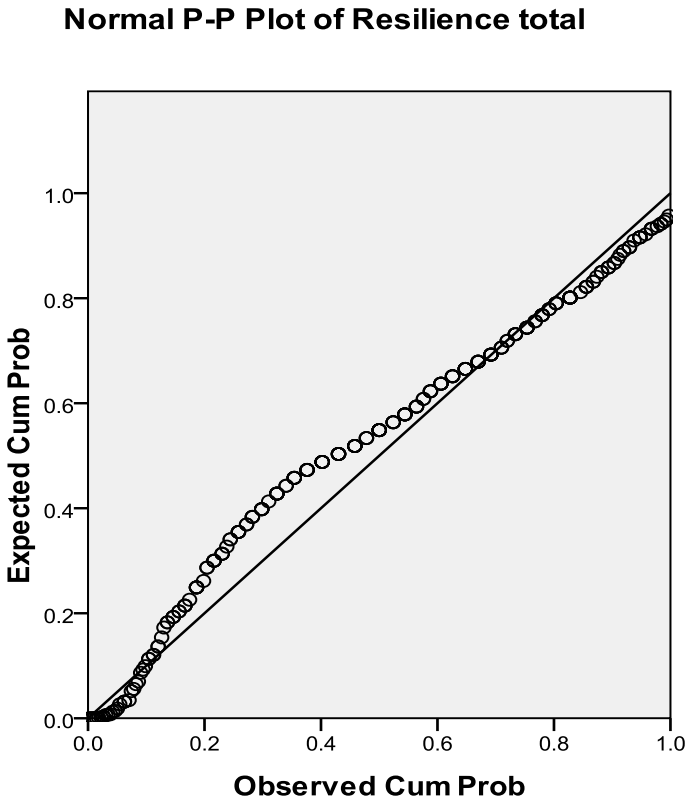


***Figure B2*: P-P Plot for Resilience Scale**

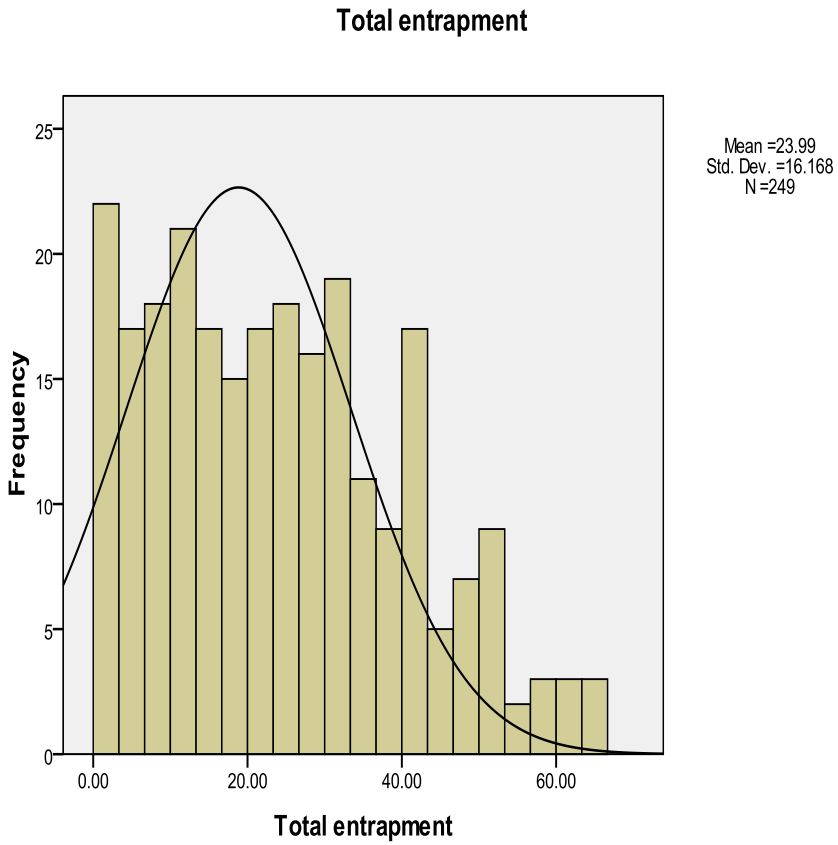


***Figure B3*: Normality Histogram for total score on Entrapment Scale**

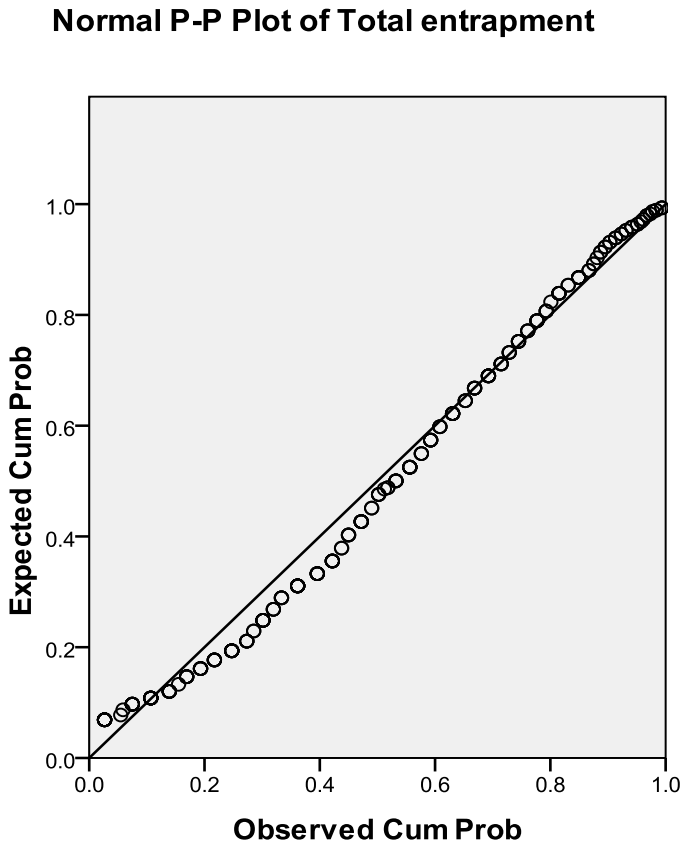


***Figure B4*: P-P plot for total score on Entrapment Scale**

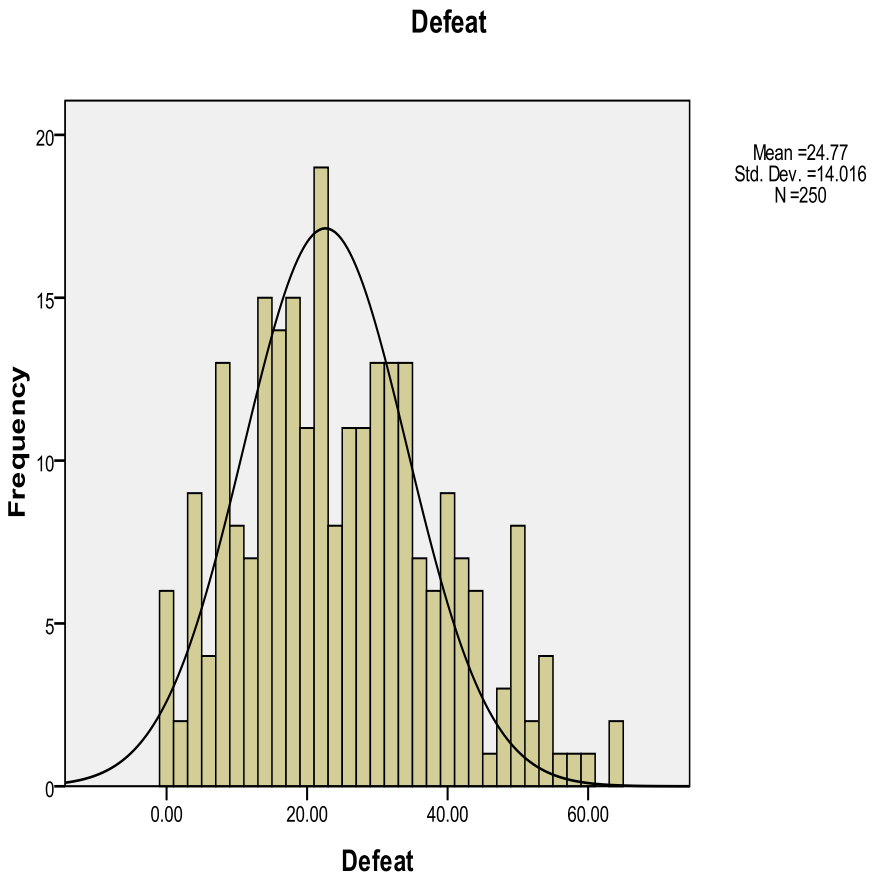


Figure B5: **Normality Histogram for Defeat Scale**

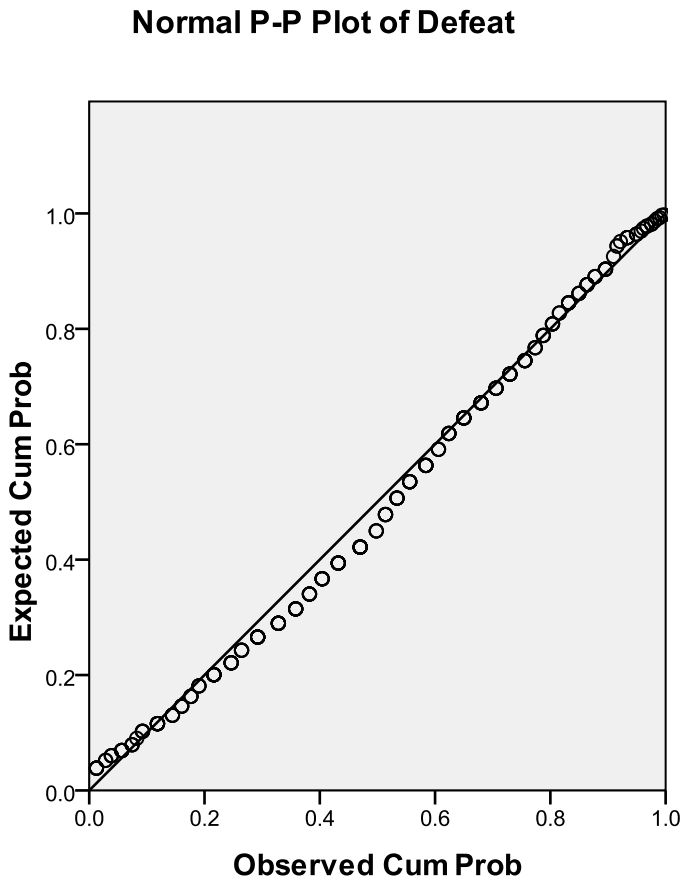


Figure B6: **Normal P-P plot for Defeat Scale**

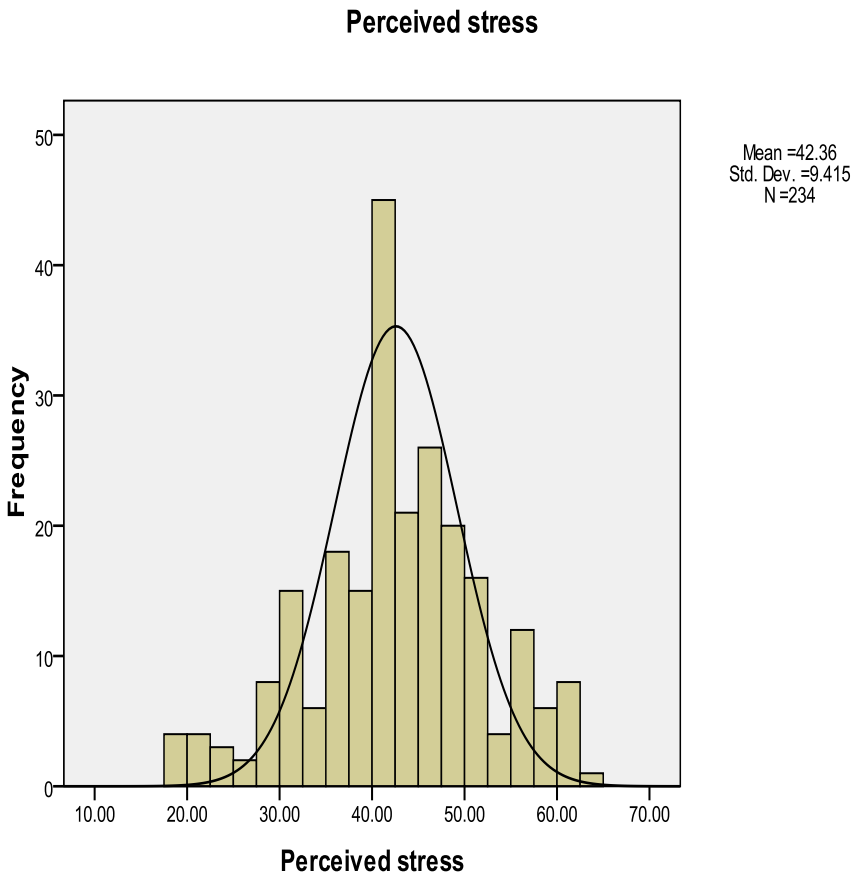


***Figure B7*: Normality Histogram for Perceived Stress Scale**

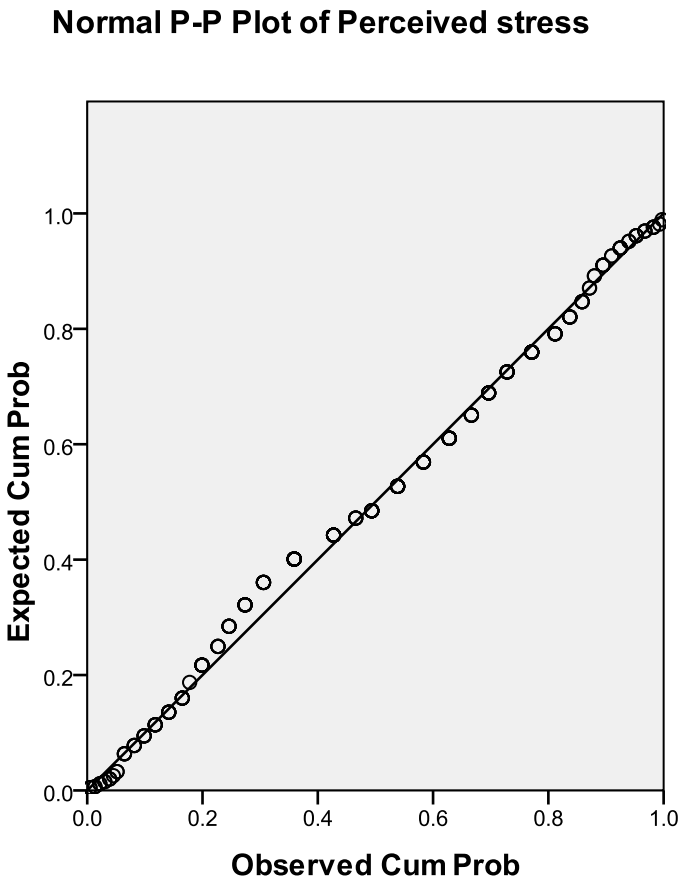


***Figure B8*: Normal P-P plot for Perceived Stress Scale**

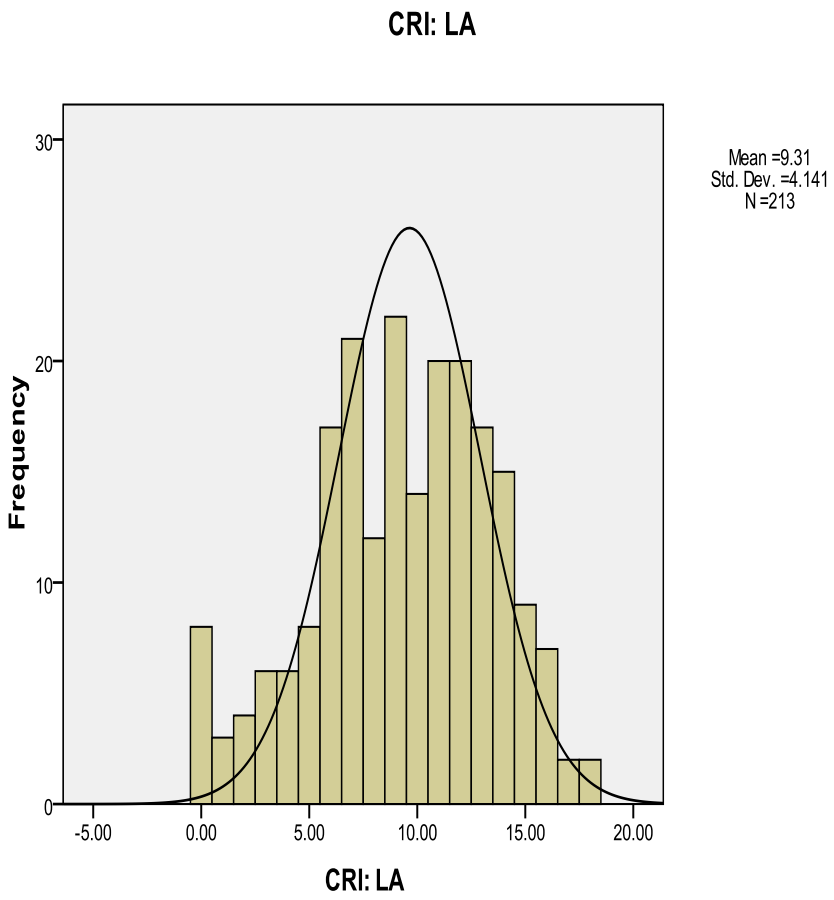


***Figure B9*: Normality Histogram for CRI: LA**

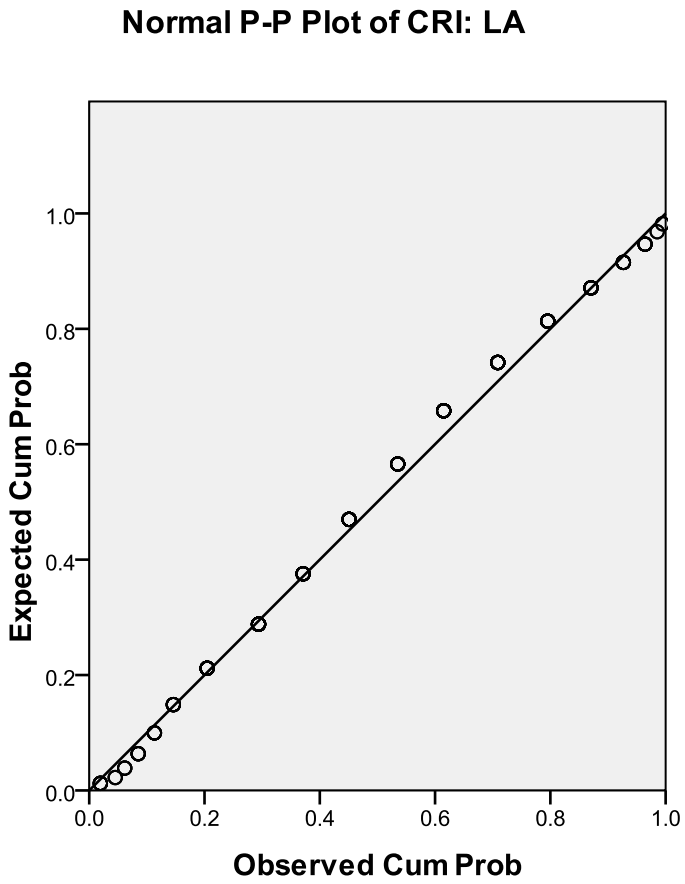


***Figure B10*: Normal P-P plot for CRI: LA**

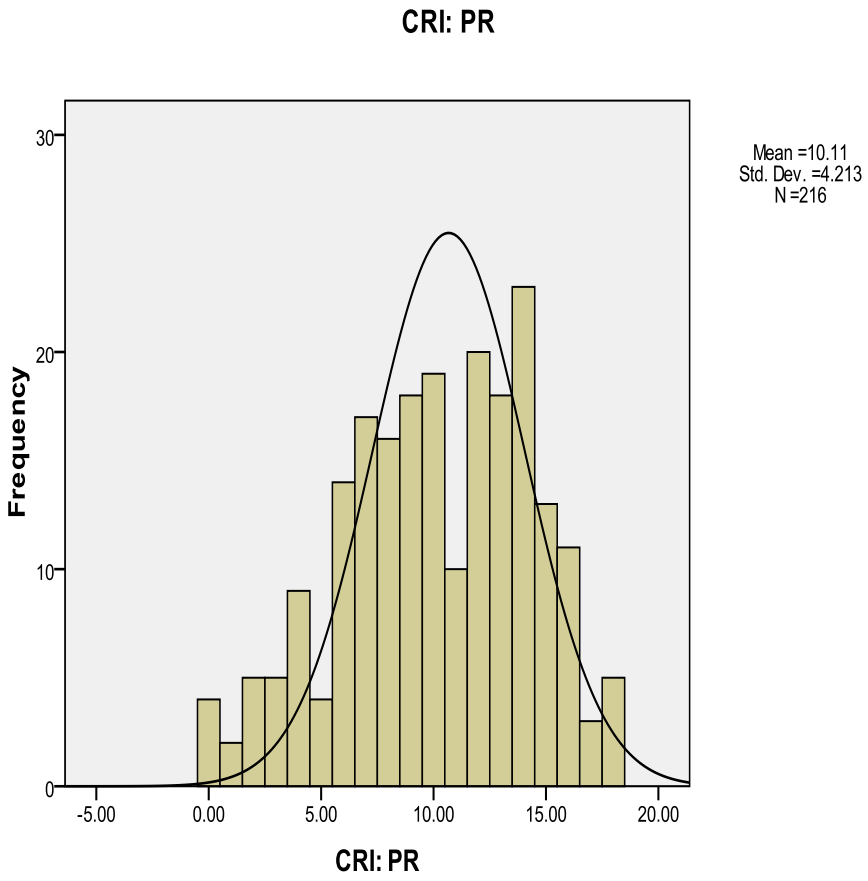


***Figure B11*: Normality Histogram for CRI: PR**

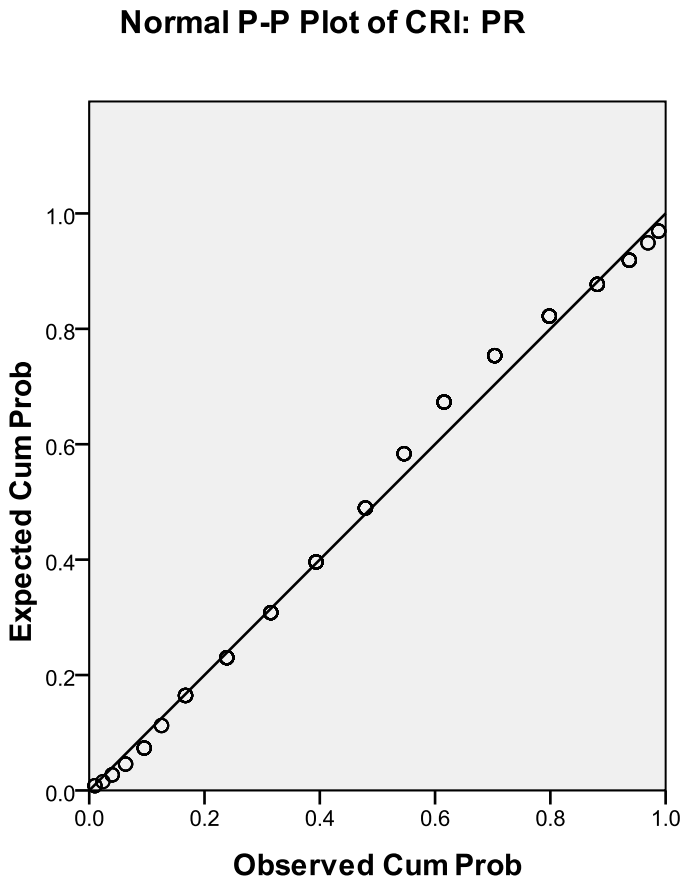


***Figure B12*: Normal P-P plot for CRI: PR**

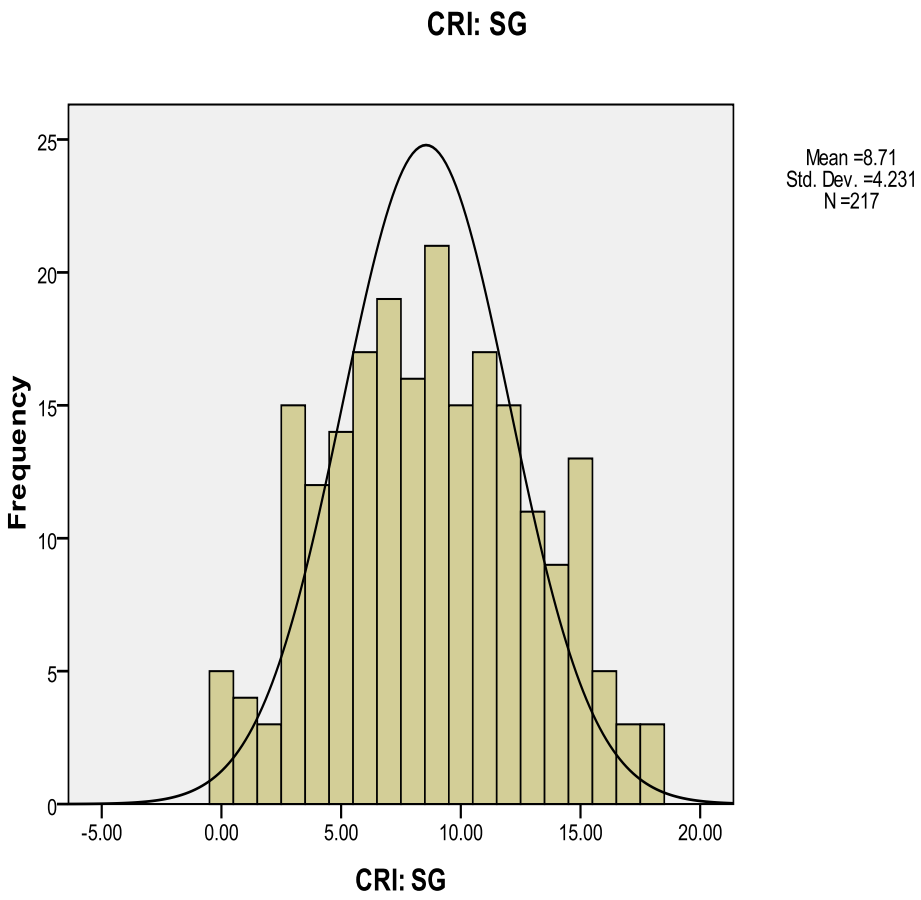


***Figure B13*: Normality Histogram for CRI: SG**

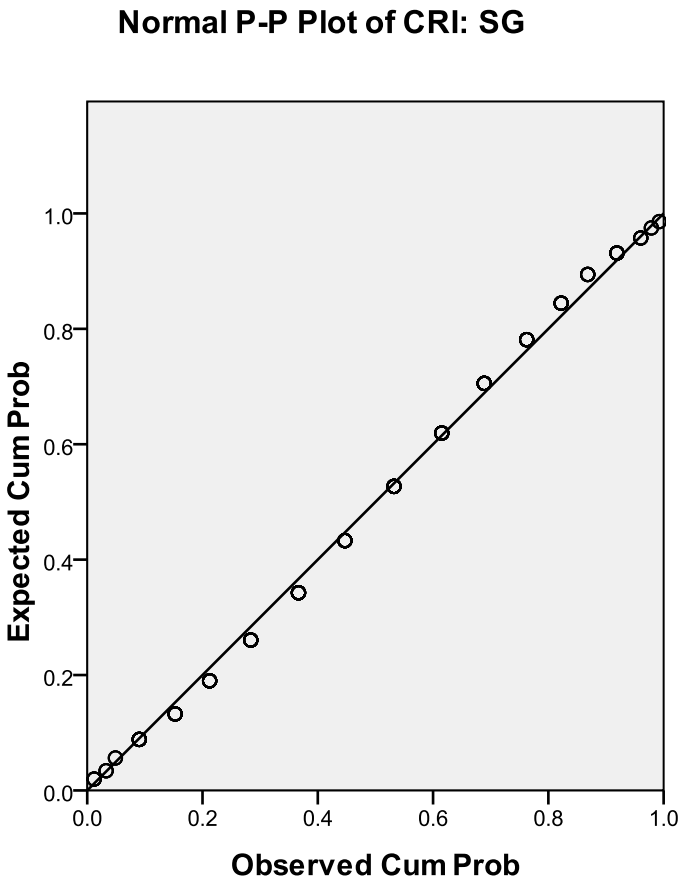


***Figure B14*: Normal P-P plot for CRI: SG**

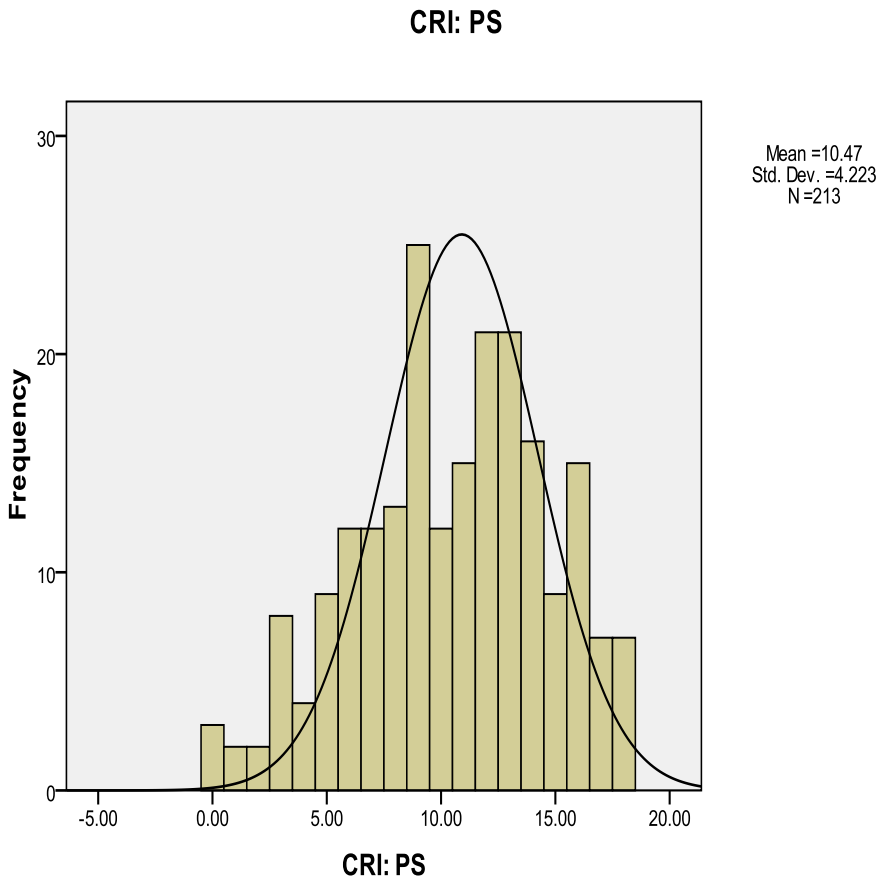


Figure B15: **Normality Histogram for CRI: PS**

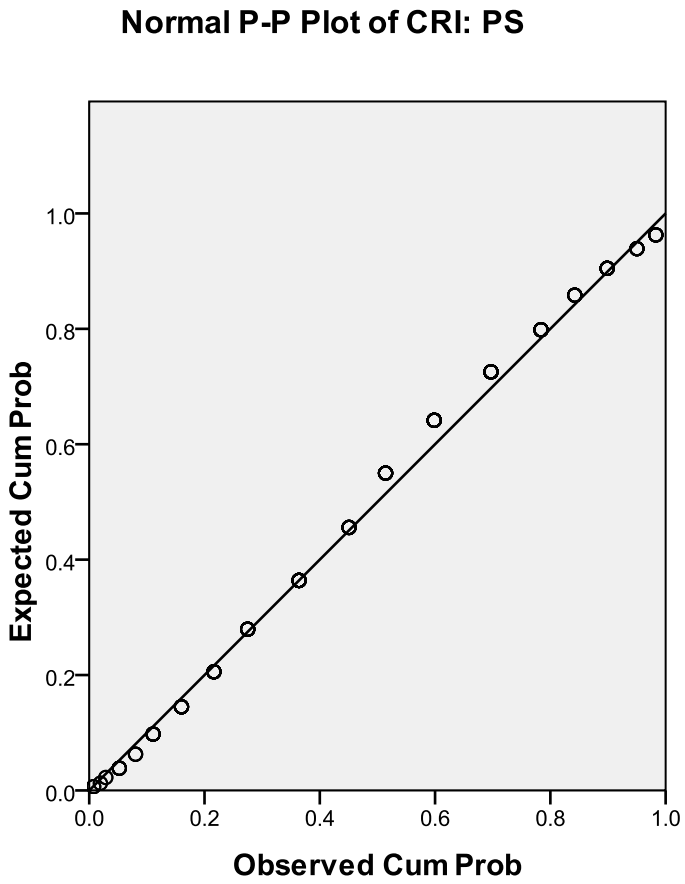


Figure B16: **Normal P-P plot for CRI: PS**

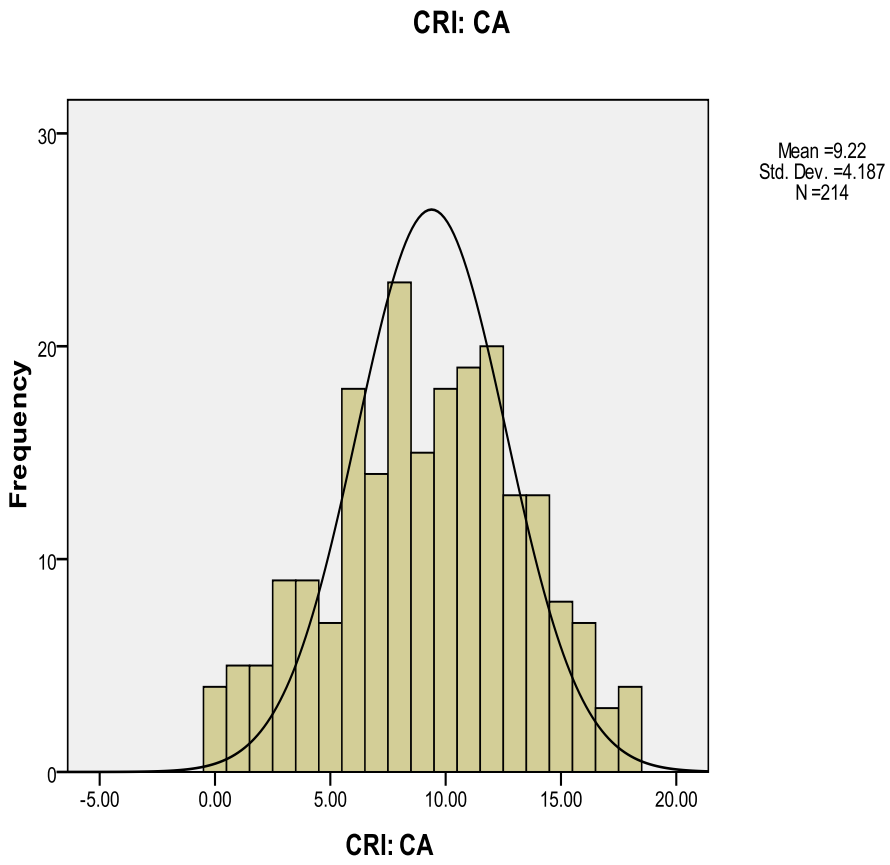


***Figure B17*: Normality Histogram for CRI: CA**

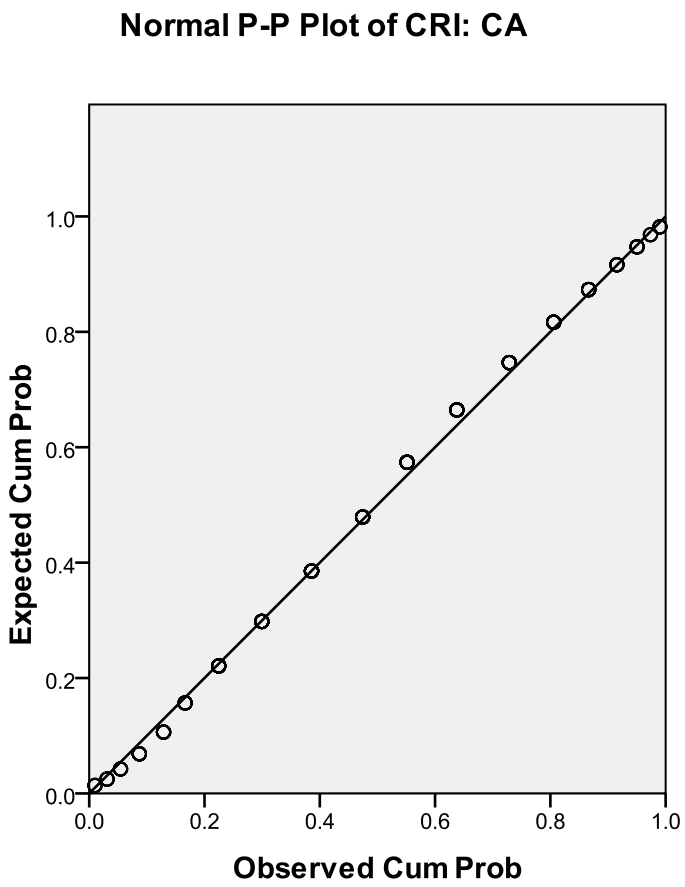


***Figure B18*: Normal P-P plot for CRI: CA**

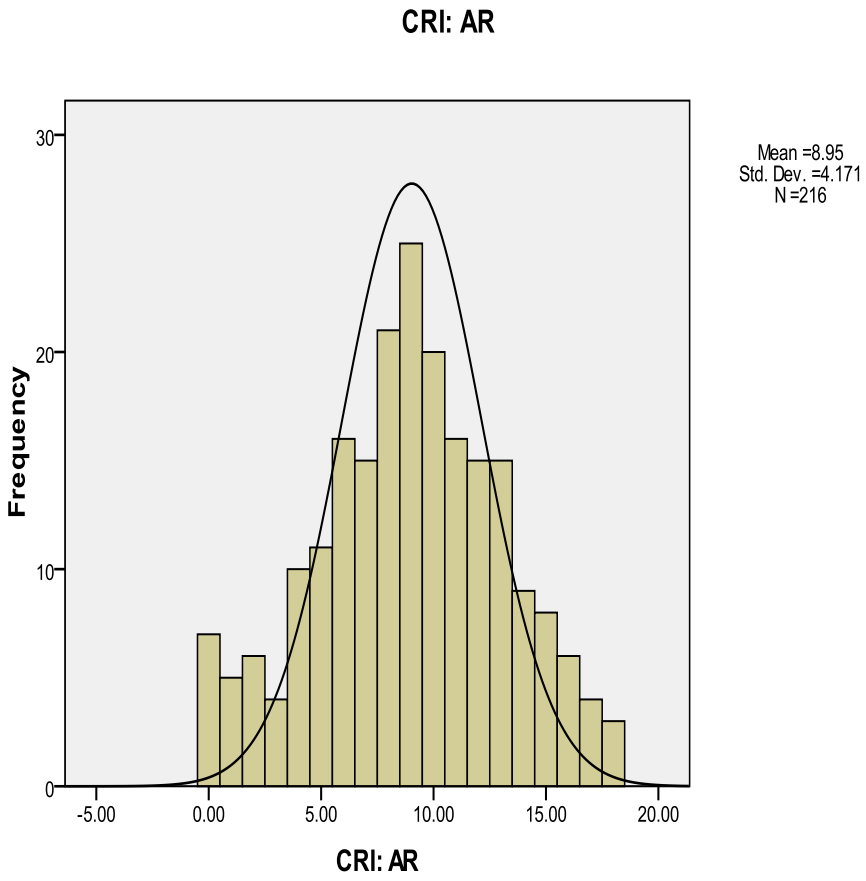


Figure B19: **Normality Histogram for CRI: AR**

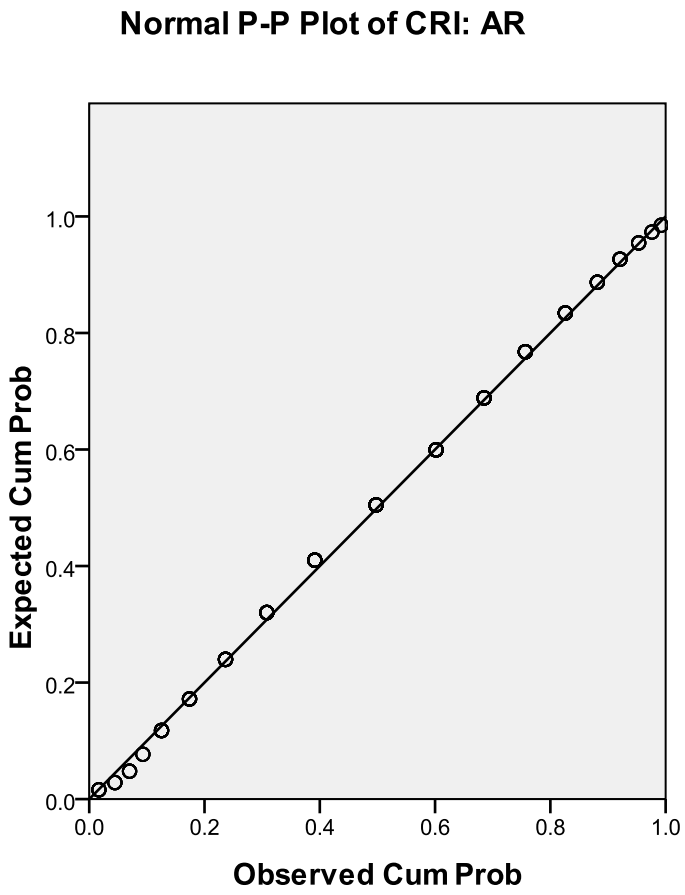


Figure B20: **Normal P-P plot for CRI: AR**

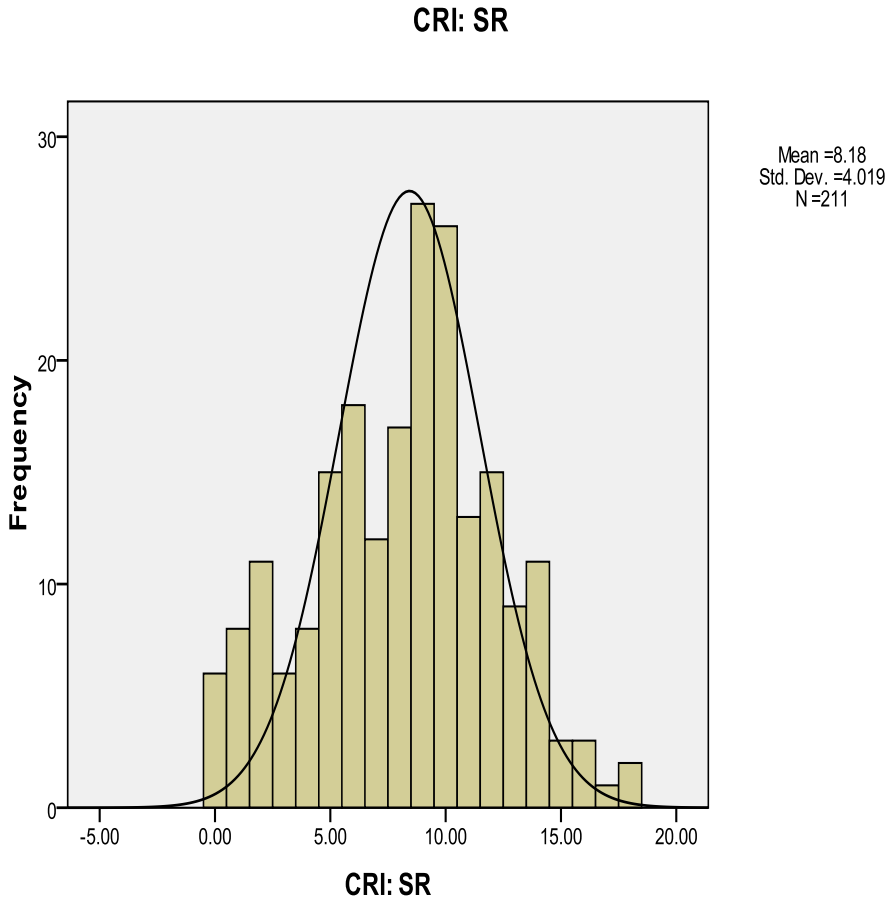


***Figure B21*: Normality Histogram for CRI: SR**

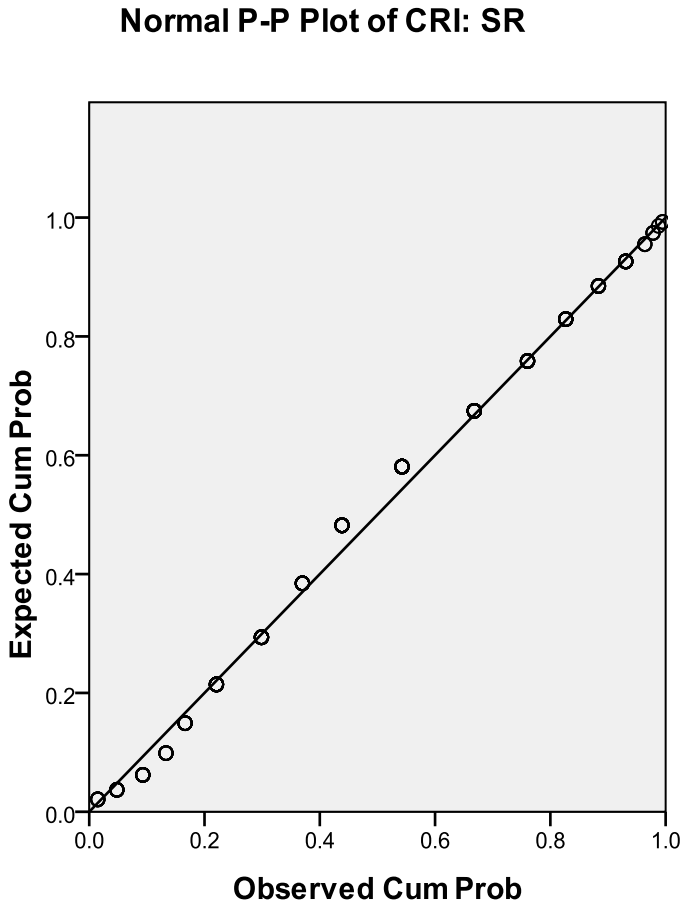


***Figure B22*: Normal P-P plot for CRI: SR**

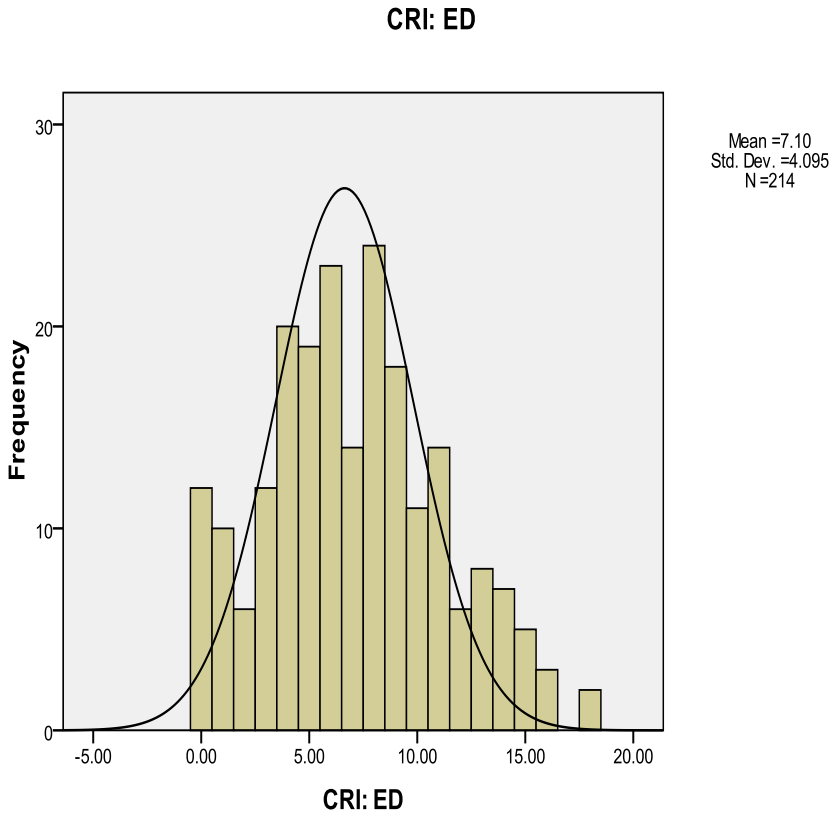


***Figure B23*: Normality Histogram for CRI: ED**

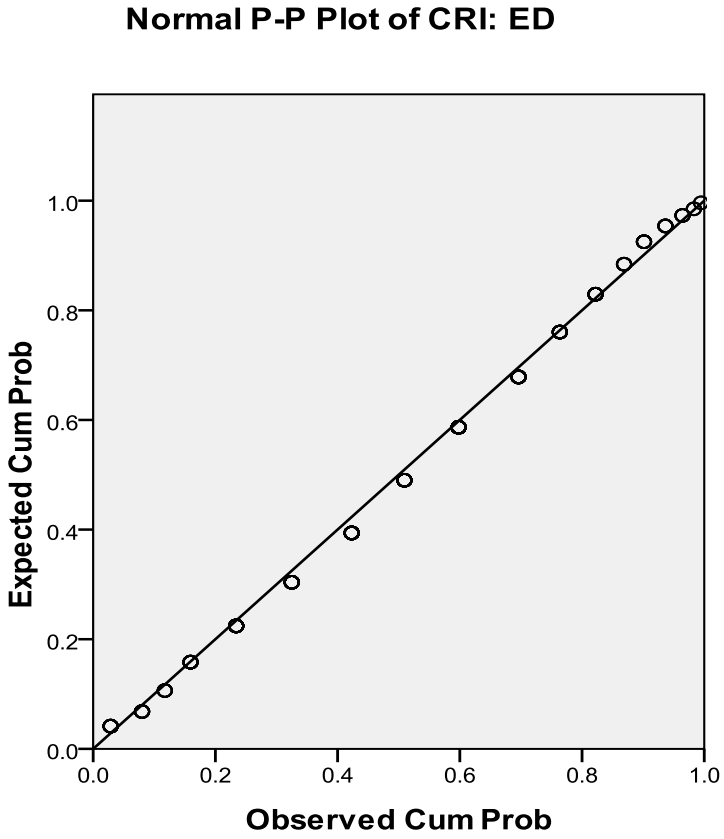


***Figure B24*: Normal P-P plot for CRI: ED**

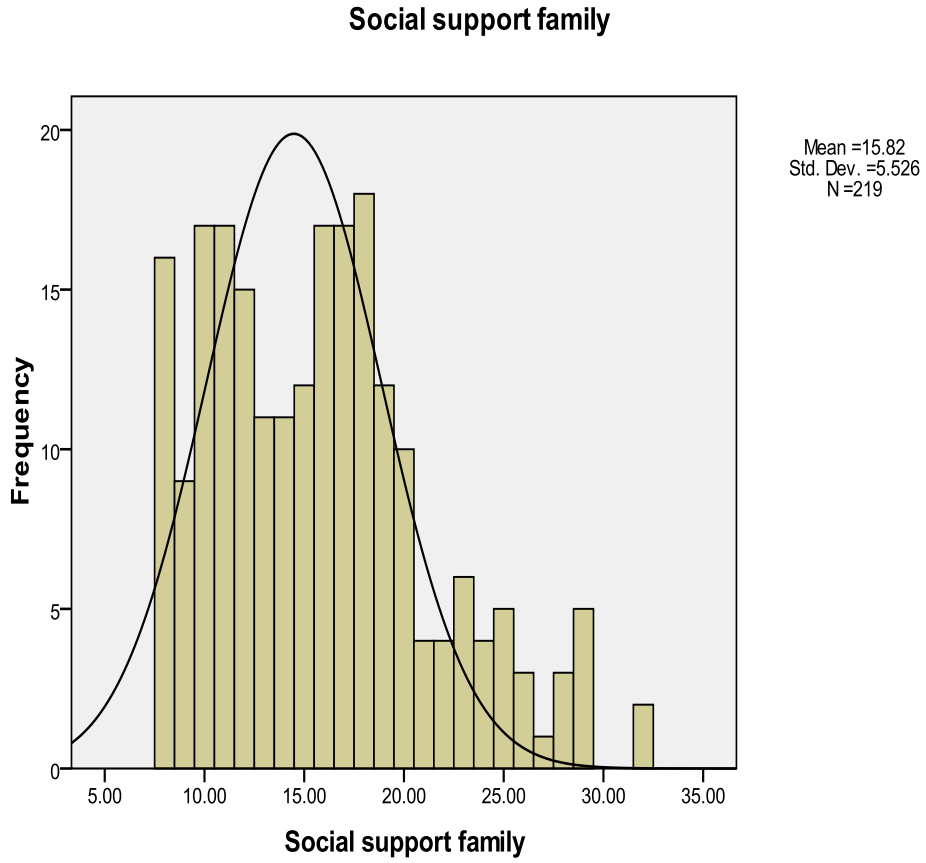


Figure B25: **Normality Histogram for SS-A - family**

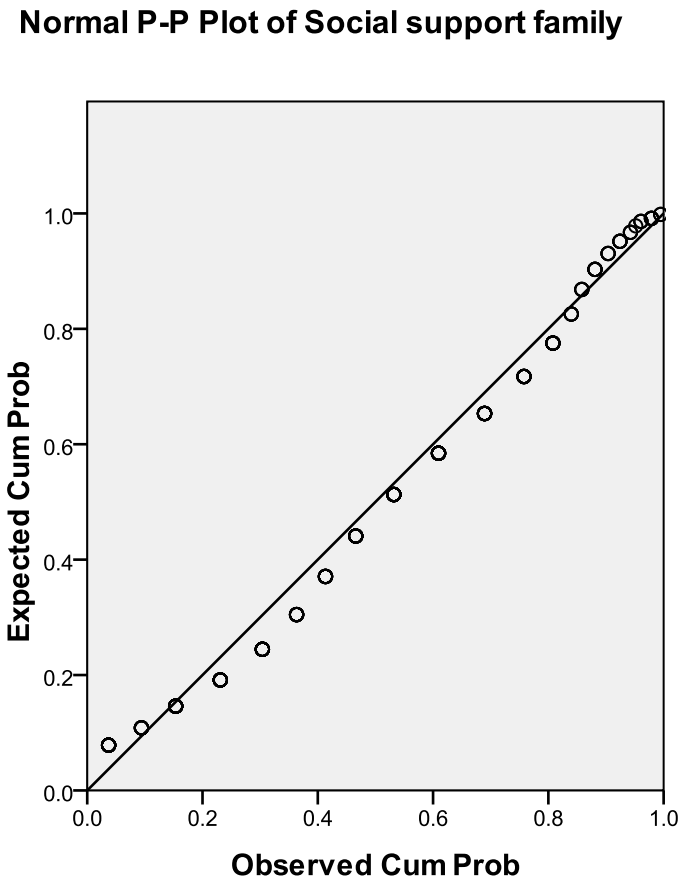


Figure B26: **Normal P-P plot for SS-A-family**

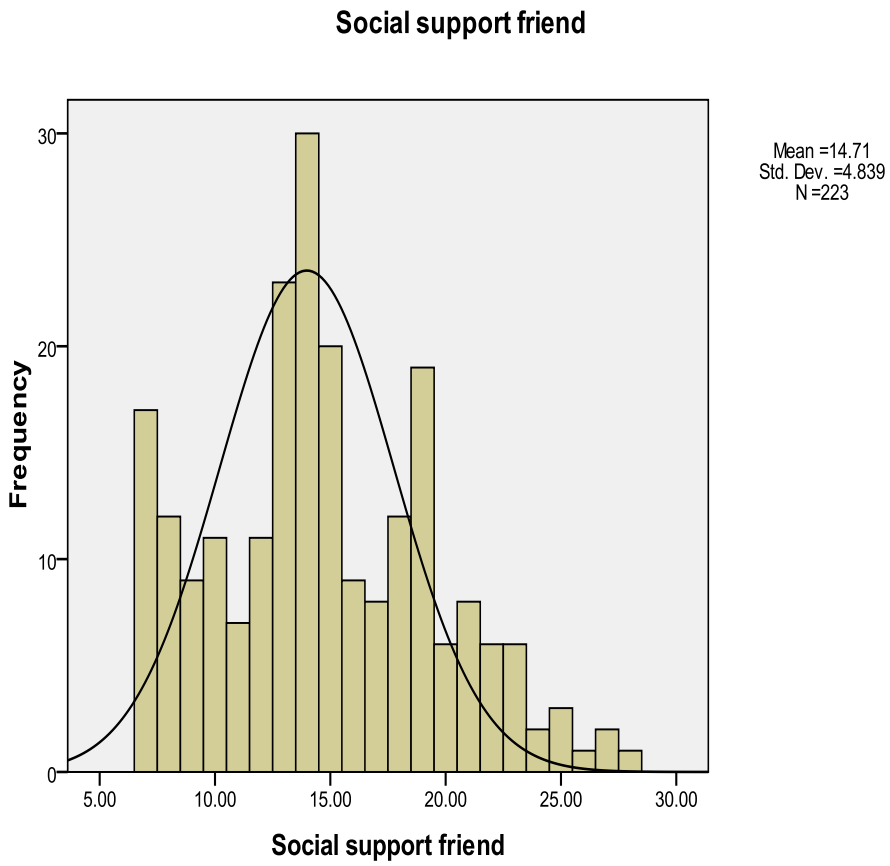


Figure B27: **Normality Histogram for SS-A - friends**

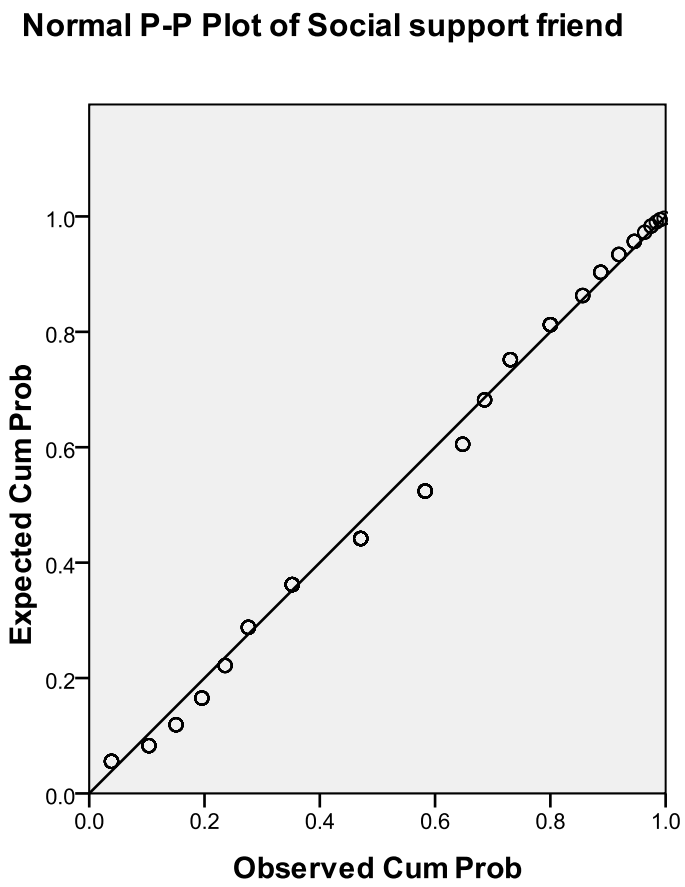


Figure B28: **Normal P-P plot for SS-A - friends**

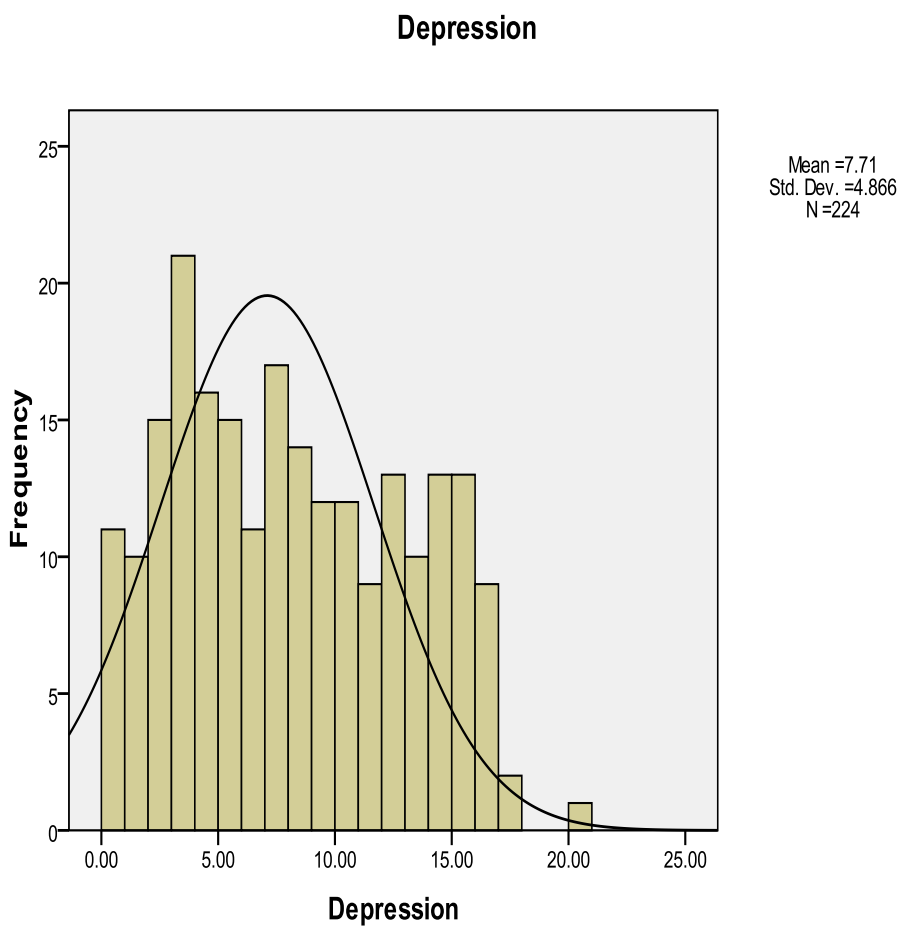


***Figure B29*: Normality Histogram for DHS - depression**

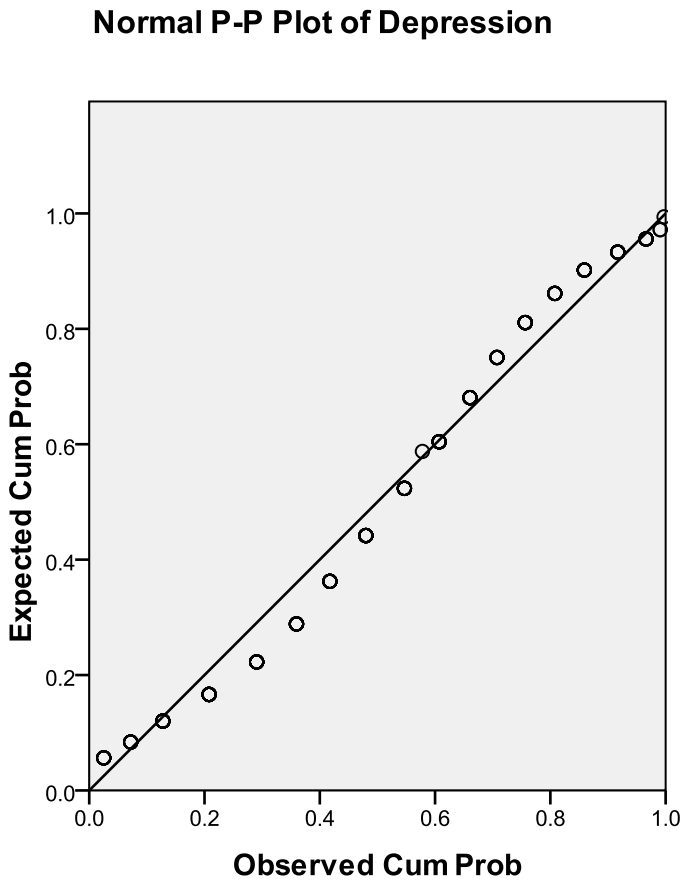


***Figure B30*: Normal P-P plot for DHS-depression**

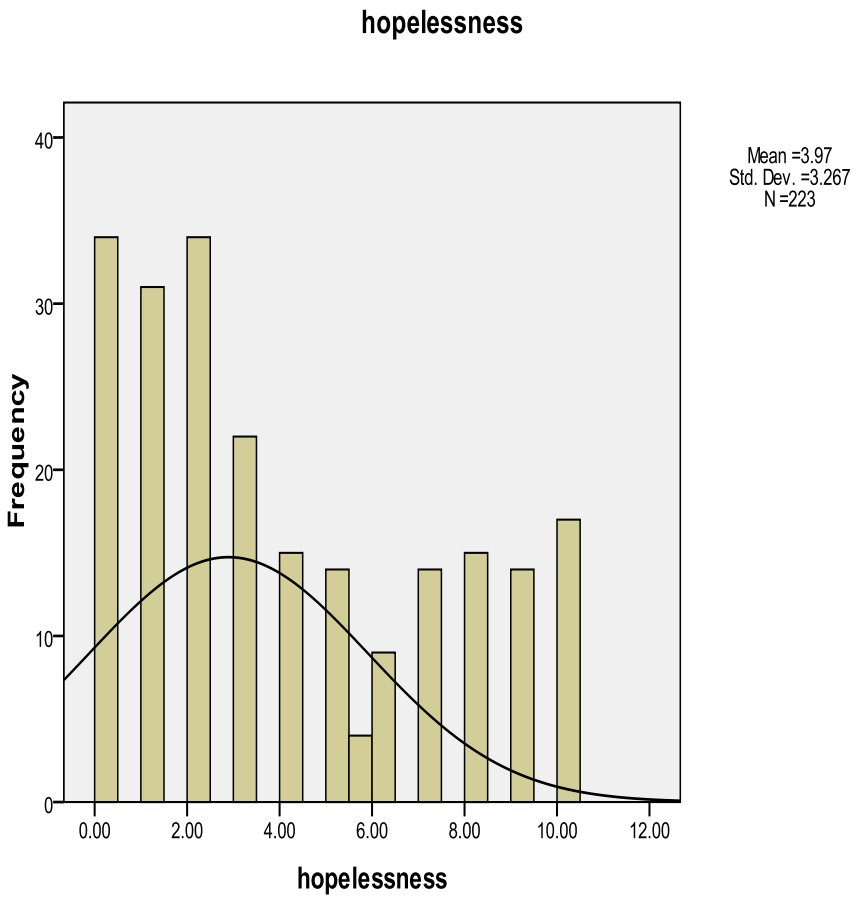


***Figure B31*: Normality Histogram for DHS- hopelessness**

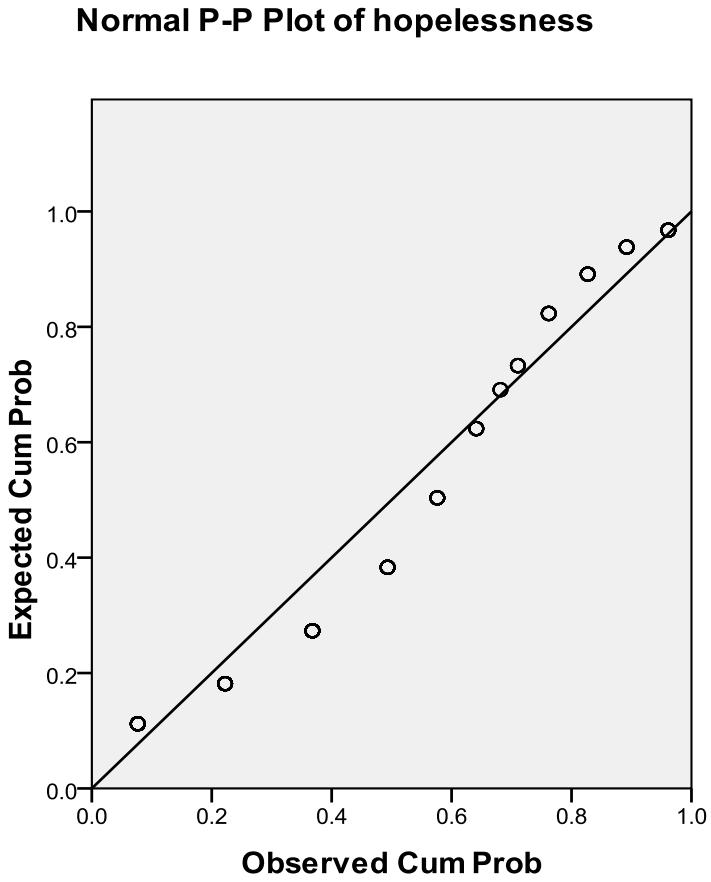


***Figure B32*: Normal P-P plot for DHS- hopelessness**

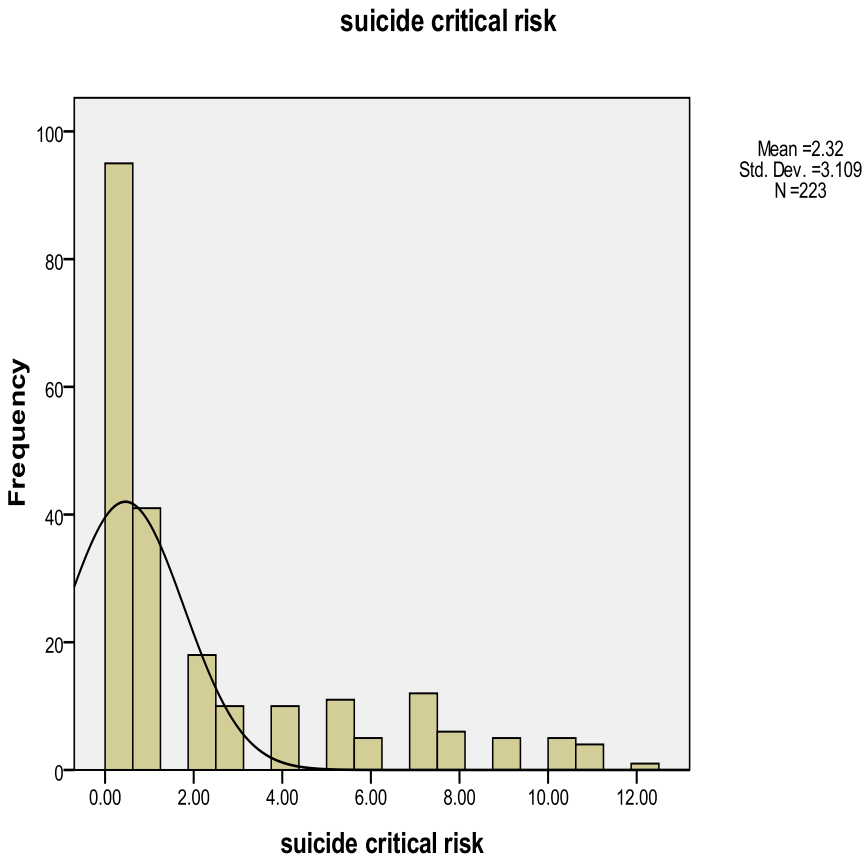


***Figure B33*: Normality Histogram for DHS- suicide critical item**

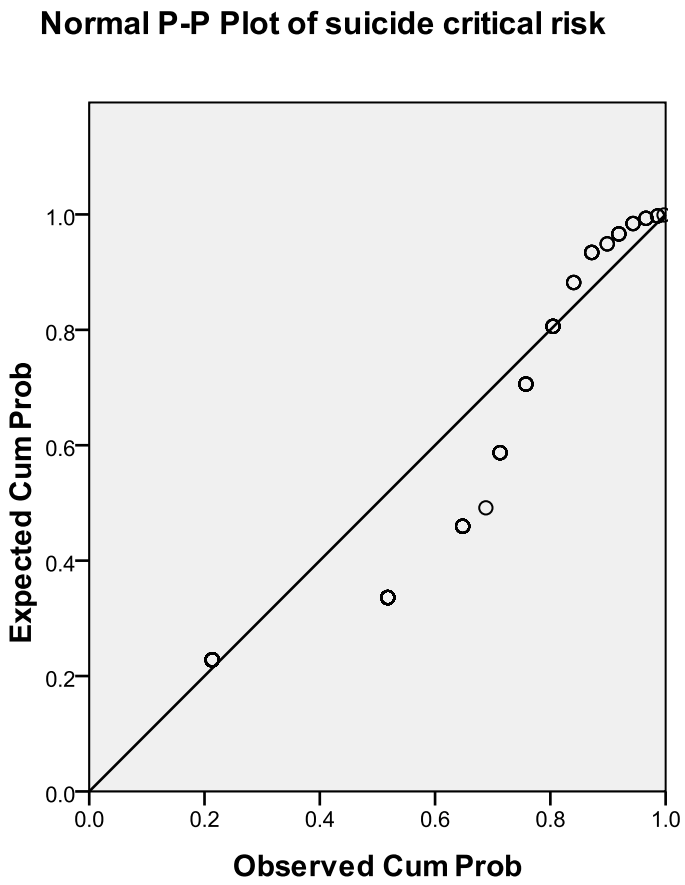


***Figure B34*: Normal P-P plot for DHS- suicide critical item**

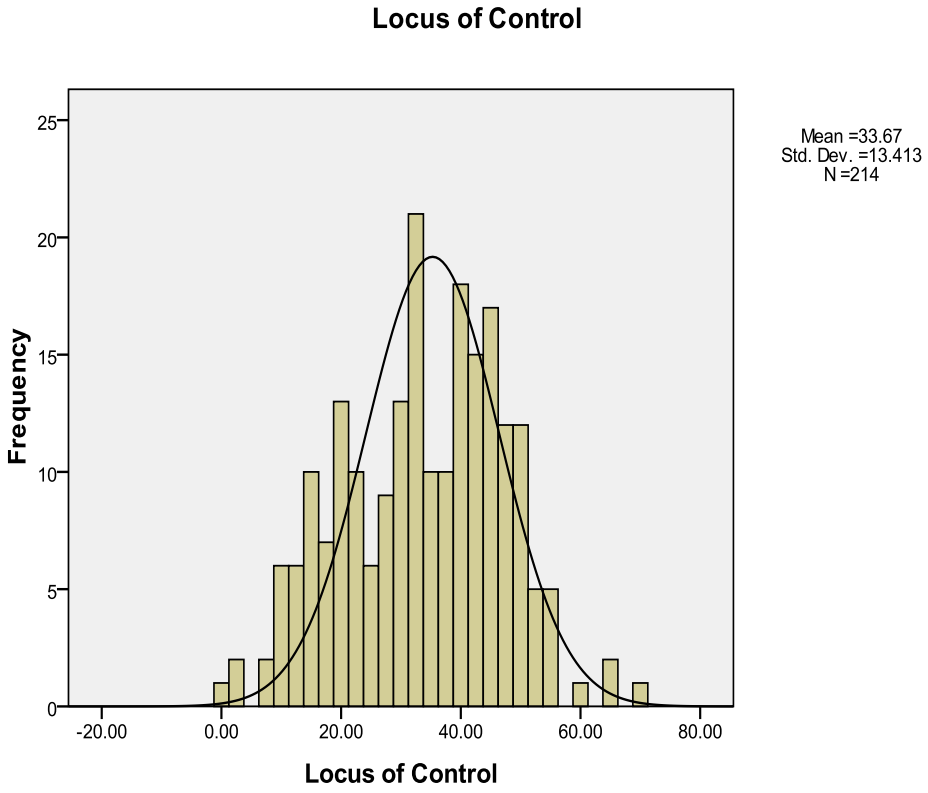


Figure B35: **Normality Histogram for Locus of Control of Behaviour**

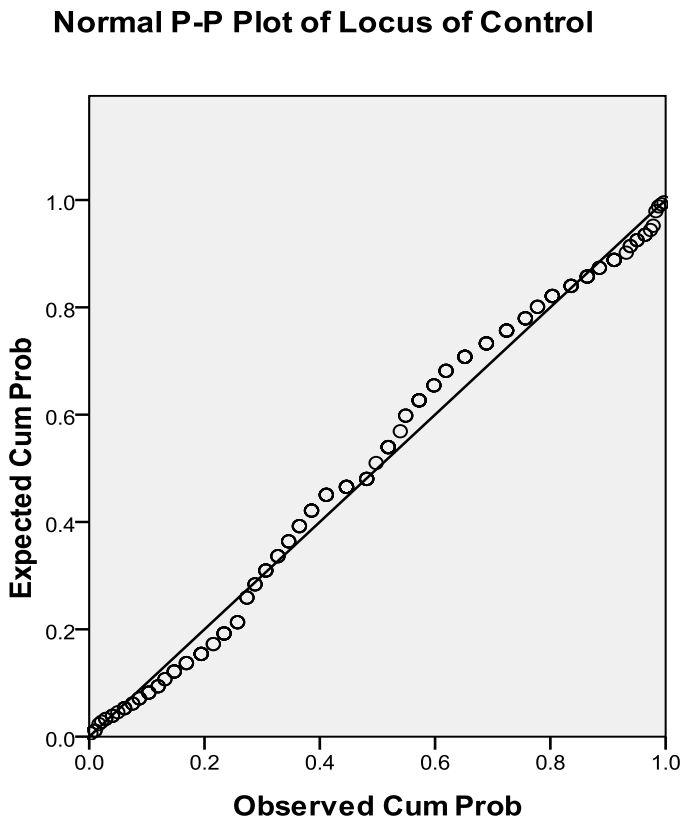


Figure B36: **Normal P-P plot for Locus of Control of Behaviour**

APPENDIX C

DISCRIMINANT FUNCTION ANALYSIS (DFA) CONSIDERING PARTICIPANTS WHO REPORTED PREVIOUS SELF-HARM VERSUS NO PREVIOUS SELF-HARM

Table C1 : ***Means and Standard Deviations for Participants who previously self-harmed and participants who did not previously self-harm***

	previous self harm	Mean	Std. Deviation	N
Resilience total	no	130.7840	25.23265	125
	yes	122.9423	28.11420	52
Total entrapment	no	21.3792	14.79546	125
	yes	36.4808	14.27529	52
Defeat	no	23.5520	13.38840	125
	yes	33.6923	13.12614	52
Perceived stress	no	40.1904	9.12018	125
	yes	49.0769	8.26010	52
CRI: LA	no	9.0800	4.17288	125
	yes	9.4231	4.02125	52
CRI: PR	no	10.1360	4.13354	125
	yes	9.5962	3.97669	52
CRI: SG	no	8.6400	4.40747	125
	yes	8.9423	3.80615	52
CRI: PS	no	10.6960	4.15278	125
	yes	9.7308	4.05895	52
CRI: CA	no	8.8160	4.41658	125
	yes	10.2115	3.86201	52
CRI: AR	no	8.3600	4.22435	125
	yes	10.2308	3.82774	52
CRI: SR	no	8.2560	4.14048	125
	yes	7.6346	3.41294	52
CRI: ED	no	6.3200	3.71484	125
	yes	9.0962	4.08853	52
Social support family	no	15.2720	5.17964	125
	yes	18.3269	6.08348	52
Social support friend	no	14.0960	4.58684	125
	yes	17.1538	4.95226	52
DHS - Depression	no	6.6240	4.41892	125
	yes	11.7214	3.41568	51
DHS - hopelessness	no	3.3846	3.14784	104
	yes	6.8837	2.77067	43
Locus of Control	no	32.3040	12.67425	125
	yes	42.1538	11.78423	52

Table C2: ***Box's M Test Results for DFA***

Box's M		91.344
F	Approx.	1.536
	df1	55
	df2	36326.198
	Sig.	.006

Table C3: ***Eigenvalues and canonical correlation for DFA***

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	.399[a]	100.0	100.0	.534

Table C4: ***Wilks' Lambda for DFA***

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.715	59.036	10	.000

Table C5: Classification Results for DFA

		previous self-harm	Predicted Group Membership		Total
			No	Yes	
Original	Count	No	97	32	129
		Yes	12	42	54
	%	No	75.2	24.8	100.0
		Yes	22.2	77.8	100.0

76.0% of original grouped cases correctly classified.

Table C6: ***Standardised canonical discriminant function coefficients and Structure matrix for DFA***

Structure Matrix

	Function 1
DHS Depression	.888
DHS hopelessness	.778
Total entrapment	.741
Perceived stress	.708
LCB	.559
Defeat	.539
CRI: ED	.530
SSA friend	.488
SSA family	.420
CRI: AR	.313

Standardised canonical discriminant function coeffients

	Function 1
Total entrapment	.330
Defeat	-.275
Perceived stress	.235
CRI: AR	-.050
CRI: ED	.225
SSA- family	.009
SSA- friend	.180
DHS Depression	.470
DHS hopelessness	.273
LCB	-.156

Table C7: ***Unstandardised Functions at Group Centroids for DFA***

	Function
previous self-harm	1
No	-.406
Yes	.970

APPENDIX D

HIERARCHICAL REGRESSION FOR SUICIDE RISK

Table D1: ***Hierarchical Regression Model Summary for Suicide Risk***

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.273[a]	.074	.060	3.01384	.074	5.194	3	194	.002
2	.702[b]	.493	.435	2.33615	.418	8.581	17	177	.000

Table D2: ***ANOVA for Suicide Risk***

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	141.548	3	47.183	5.194	.002[a]
	Residual	1762.151	194	9.083		
	Total	1903.700	197			
2	Regression	937.704	20	46.885	8.591	.000[b]
	Residual	965.995	177	5.458		
	Total	1903.700	197			

Table D3: ***Pearson Correlations for measures for hierarchical regression***

		suicide critical item	Age	Times in prison	Resilience	Total entrap	Defeat	PSS	CRI: LA	CRI: PR	CRI: SG	CRI: PS	CRI: CA	CRI: AR	CRI: SR	CRI: ED	SS-A family	SS-A friend	Depress	hopeless	Locus of Control
Pearson Correlation	DHS suicide critical item	1.00	.015	.270	-.273	.494	.481	.489	-.069	-.153	-.089	-.249	.223	.269	-.140	.325	.414	.376	.628	.569	.504
	Age	.015	1.000	.134	-.082	.056	.058	-.025	.145	-.020	.024	-.005	-.035	-.033	-.077	-.093	.136	.043	.058	.047	-.069
	Times in prison	.270	.134	1.000	-.008	.180	.073	.190	.070	.067	-.004	-.051	.115	.027	-.074	.182	.237	.210	.215	.116	.148
	Resilience total	-.273	-.082	-.008	1.000	-.311	-.417	-.345	.158	.225	.139	.288	-.065	-.124	.271	-.161	-.196	-.267	-.349	-.363	-.290
	Entrapment	.494	.056	.180	-.311	1.000	.712	.584	.056	-.085	.017	-.159	.371	.352	-.128	.375	.419	.436	.704	.713	.633
	Defeat	.481	.058	.073	-.417	.712	1.000	.627	-.076	-.248	-.094	-.284	.267	.321	-.197	.293	.449	.412	.688	.700	.581
	Perceived stress	.489	-.025	.190	-.345	.584	.627	1.000	-.014	-.133	-.050	-.176	.264	.229	-.238	.393	.254	.338	.687	.616	.532
	CRI: LA	-.069	.145	.070	.158	.056	-.076	-.014	1.00	.627	.538	.665	.402	.361	.482	.355	.024	-.039	.086	-.017	-.122
	CRI: PR	-.153	-.020	.067	.225	-.085	-.248	-.133	.627	1.00	.580	.684	.362	.278	.587	.270	-.086	-.165	-.068	-.153	-.133
	CRI: SG	-.089	.024	-.004	.139	.017	-.094	-.050	.538	.580	1.00	.632	.300	.232	.521	.164	-.134	-.094	-.026	-.065	-.076
	CRI: PS	-.249	-.005	-.051	.288	-.159	-.284	-.176	.665	.684	.632	1.00	.279	.179	.562	.201	-.154	-.206	-.118	-.194	-.239
	CRI: CA	.223	-.035	.115	-.065	.371	.267	.264	.402	.362	.300	.279	1.00	.618	.192	.471	.191	.188	.409	.342	.339
	CRI: AR	.269	-.033	.027	-.124	.352	.321	.229	.361	.278	.232	.179	.618	1.00	.219	.436	.144	.241	.374	.370	.348
	CRI: SR	-.140	-.077	-.074	.271	-.128	-.197	-.238	.482	.587	.521	.562	.192	.219	1.00	.214	-.113	-.155	-.121	-.169	-.124
	CRI: ED	.325	-.093	.182	-.161	.375	.293	.393	.355	.270	.164	.201	.471	.436	.214	1.00	.334	.249	.436	.317	.337
	SS-A family	.414	.136	.237	-.196	.419	.449	.254	.024	-.086	-.134	-.154	.191	.144	-.113	.334	1.000	.479	.407	.384	.295
	SS-A friend	.376	.043	.210	-.267	.436	.412	.338	-.039	-.165	-.094	-.206	.188	.241	-.155	.249	.479	1.000	.464	.339	.342
	DHS depression	.628	.058	.215	-.349	.704	.688	.687	.086	-.068	-.026	-.118	.409	.374	-.121	.436	.407	.464	1.000	.816	.654
	DHS hopelessness	.569	.047	.116	-.363	.713	.700	.616	-.017	-.153	-.065	-.194	.342	.370	-.169	.317	.384	.339	.816	1.000	.695
	LCB	.504	-.069	.148	-.290	.633	.581	.532	-.122	-.133	-.076	-.239	.339	.348	-.124	.337	.295	.342	.654	.695	1.000

Table D4: ***Hierarchical Regression Full Model: Significance, Beta Values and Collinearity diagnostics***

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1.893	.779		2.430	.016					
	Age	-.005	.021	-.018	-.251	.802	.015	-.018	-.017	.973	1.028
	Times in prison	.205	.053	.271	3.883	.000	.270	.269	.268	.980	1.020
	Conviction status	.220	.431	.035	.511	.610	.045	.037	.035	.990	1.010
2	(Constant)	-1.634	1.849		-.884	.378					
	Age	-.006	.018	-.021	-.358	.721	.015	-.027	-.019	.848	1.179
	Times in prison	.092	.044	.121	2.064	.040	.270	.153	.111	.828	1.207
	Conviction status	.234	.350	.038	.670	.504	.045	.050	.036	.905	1.105
	Resilience total	-.001	.007	-.012	-.188	.851	-.273	-.014	-.010	.729	1.372
	Total entrapment	-.002	.018	-.011	-.125	.901	.494	-.009	-.007	.342	2.925
	Defeat	-.021	.021	-.095	-.996	.321	.481	-.075	-.053	.315	3.173
	PSS	.025	.028	.076	.906	.366	.489	.068	.048	.407	2.454
	CRI: LA	-.047	.064	-.063	-.735	.463	-.069	-.055	-.039	.389	2.571
	CRI: PR	-.044	.064	-.060	-.695	.488	-.153	-.052	-.037	.382	2.620
	CRI: SG	.059	.056	.080	1.046	.297	-.089	.078	.056	.492	2.033
	CRI: PS	-.116	.068	-.157	-1.715	.088	-.249	-.128	-.092	.340	2.938
	CRI: CA	-.043	.057	-.058	-.751	.454	.223	-.056	-.040	.485	2.061
	CRI: AR	.078	.057	.105	1.375	.171	.269	.103	.074	.494	2.024
	CRI: SR	.037	.058	.048	.638	.524	-.140	.048	.034	.510	1.961
	CRI: ED	.042	.056	.056	.756	.451	.325	.057	.040	.526	1.901
	SS-A family	.094	.040	.168	2.373	.019	.414	.176	.127	.574	1.741
	SS-A friend	.000	.045	.001	.009	.993	.376	.001	.000	.587	1.703
	LCB	.013	.019	.055	.655	.514	.504	.049	.035	.408	2.448
	DHS Depression	.245	.073	.383	3.336	.001	.628	.243	.179	.217	4.605
	DHS hopelessness	.098	.106	.103	.924	.357	.569	.069	.049	.229	4.361

Dependent Variable: suicide critical item

APPENDIX E

LOGISTIC REGRESSION CONSIDERING THE PREDICTION OF FUTURE ENGAGEMENT IN SELF-HARM IN PRISON

Table E1: ***Linearity of the Logit analysis for Logistic Regression***

Variables	Score	df	Sig.
Resilience Scale	.626	1	.429
Entrapment Scale	.272	1	.602
Defeat Scale	.641	1	.423
PSS	1.687	1	.194
CRI: LA	.541	1	.462
CRI: PR	.207	1	.649
CRI:SG	1.081	1	.298
CRI:PS	3.018	1	.082
CRI:CA	.371	1	.542
CRI:AR	.521	1	.470
CRI:SR	.347	1	.556
CRI:ED	.181	1	.671
SS-A family	.011	1	.917
SS-A friend	.043	1	.837
DHS depression	.140	1	.708
DHS hopelessness	.015	1	.903
DHS Suicide risk	8.755	1	.003
LOC	6.049	1	.014
LN Resilience by Resilience	.589	1	.443
LN Entrapment by entrapment	.192	1	.661
LN defeat by defeat	.675	1	.411
LNPSS by PSS	1.651	1	.199
LN CRI:LA by CRI:LA	.682	1	.409
LN CRI:PR by CRI:PR	.233	1	.629
LN CRI:SG by CRI:SG	1.291	1	.256
LN CRI:PS by CRIPS	2.903	1	.088
LN CRI:CA by CRI:CA	.446	1	.504
LN CRI:AR by CRI:AR	.486	1	.486
LN CRI:SR by CRI:SR	.481	1	.488
LN CRI:ED by CRI:ED	.138	1	.711
LN SS-A family by SS-A (family)	.021	1	.884
LN SS-A friend by SS-A (friend)	.032	1	.859
LN depression by DHS depression	.227	1	.634
LN hopelessness by DHS hopelessness	.004	1	.952
LN suicide risk by DHS Suicide risk	10.420	1	.001
LN LOC by LOC	6.278	1	.012

Table E2: ***Collinearity statistics for Logistic Regression***

Model	Collinearity Statistics	
	Tolerance	VIF
Age	.855	1.170
Times in prison	.809	1.236
Resilience total	.736	1.359
Entrapment	.342	2.925
Defeat	.314	3.189
Perceived stress	.409	2.443
CRI: LA	.388	2.578
CRI: PR	.381	2.627
CRI: SG	.490	2.040
CRI: PS	.336	2.972
CRI: CA	.485	2.064
CRI: AR	.496	2.018
CRI: SR	.509	1.965
CRI: ED	.526	1.903
SS-A family	.563	1.776
SS-A friend	.605	1.652
DHS Depression	.207	4.828
DHS hopelessness	.236	4.231
DHS suicide critical	.509	1.966
LCB	.408	2.454

Table E3: ***Logistic regression Model Summary***

Step	-2 Log likelihood	Cox and Snell R Square	Nagelkerke R Square
1	31.269[a]	.391	.790

Table E4: ***Logistic regression Classification Table***

Observed			Predicted		
			Any self-harm		Percentage Correct
			no	yes	
Step 1	Any self-harm	no	147	2	98.7
		yes	4	14	77.8
	Overall Percentage				96.4

Table E5: ***Logistic Regression model***

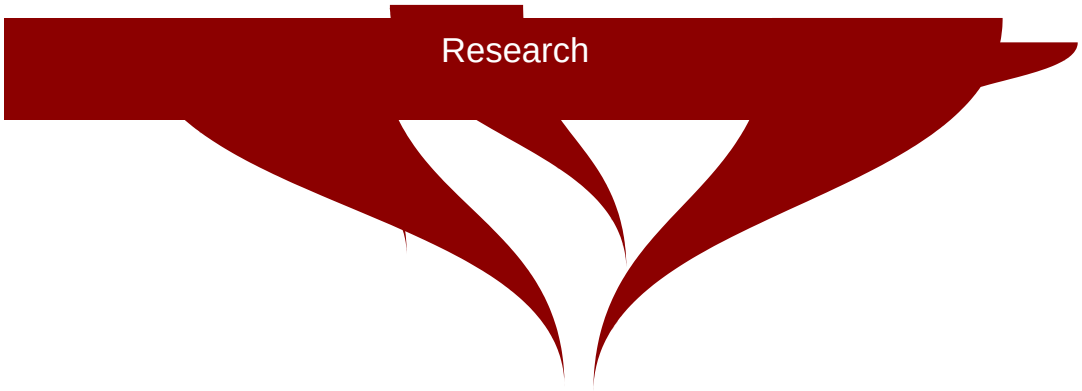
Variable	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Age	.022	.072	.095	1	.758	1.022	.888	1.178
Times in prison	-.067	.152	.193	1	.661	.935	.694	1.260
Resilience Scale	.072	.047	2.409	1	.121	1.075	.981	1.177
Entrapment Scale	-.250	.100	6.321	1	.012	.778	.640	.946
Defeat Scale	.223	.097	5.267	1	.022	1.250	1.033	1.513
PSS	.457	.224	4.181	1	.041	1.580	1.019	2.449
CRILA	.230	.288	.638	1	.425	1.259	.716	2.214
CRIPR	.312	.225	1.919	1	.166	1.365	.879	2.122
CRISG	-.446	.230	3.743	1	.053	.640	.408	1.006
CRIPS	.330	.365	.815	1	.367	1.390	.680	2.844
CRICA	-.589	.295	3.993	1	.046	.555	.311	.989
CRIAR	-.035	.216	.027	1	.871	.965	.633	1.474
CRISR	-.176	.221	.638	1	.425	.838	.544	1.292
CRIED	.204	.256	.637	1	.425	1.226	.743	2.024
SS-A family	-.450	.232	3.767	1	.052	.638	.405	1.004
SS-A friend	.609	.296	4.222	1	.040	1.839	1.029	3.288
LCB	.383	.165	5.381	1	.020	1.466	1.061	2.026
DHS Suicide risk	1.726	.635	7.400	1	.007	5.619	1.620	19.488
DHS depression	-1.550	.789	3.863	1	.049	.212	.045	.996
DHS hopelessness	-.393	.613	.411	1	.521	.675	.203	2.243
Constant	-42.945	18.759	5.241	1	.022	.000		

Table E6 : ***Means and Standard Deviations for Participants who self-harmed in prison and participants who did not self-harm in prison***

	Self-harm in Prison	N	Mean	Std. Deviation	Std. Error Mean
Resilience total	No	232	129.6810	26.71238	1.75375
	Yes	18	131.0556	20.31653	4.78865
Entrapment	No	232	19.88	14.78	1.15
	Yes	18	35	14.88	1.89
Defeat	No	232	24.0129	13.74426	.90235
	Yes	18	34.5000	14.22612	3.35313
Perceived stress	No	216	41.7120	9.24082	.62876
	Yes	18	50.1667	8.06773	1.90158
CRI: LA	No	195	9.4513	4.09191	.29303
	Yes	18	8.0000	4.20084	.99015
CRI: PR	No	198	10.2576	4.17623	.29679
	Yes	18	8.5556	4.28708	1.01048
CRI: SG	No	199	8.8995	4.25215	.30143
	Yes	18	6.7222	3.35727	.79132
CRI: PS	No	195	10.7026	4.16462	.29823
	Yes	18	7.9444	4.13695	.97509
CRI: CA	No	196	9.2245	4.23182	.30227
	Yes	18	9.1667	3.77686	.89022
CRI: AR	No	198	8.8788	4.13668	.29398
	Yes	18	9.7778	4.46629	1.05271
CRI: SR	No	193	8.3161	4.09377	.29468
	Yes	18	6.7222	2.78241	.65582
CRI: ED	No	196	6.9898	4.05348	.28953
	Yes	18	8.3889	4.35402	1.02625
Social support family	No	201	15.6269	5.39491	.38053
	Yes	18	18.0000	6.60659	1.55719
Social support friend	No	205	14.5122	4.85133	.33883
	Yes	18	17.1667	4.13379	.97434
DHS-Depression	No	206	7.5000	4.89973	.34138
	Yes	18	10.1550	3.76541	.88752
DHS-hopelessness	No	205	3.8244	3.26274	.22788
	Yes	18	5.7444	2.68399	.63262
DHS -suicide critical item	No	205	1.9171	2.70221	.18873
	Yes	18	6.8583	3.84770	.90691
Locus of Control	No	196	32.5230	12.97545	.92682
	Yes	18	46.1111	11.98965	2.82599

APPENDIX F

BASELINE MEASURES



Roehampton University London

Prison Research Contact

Karen Slade

CONSENT FORM

PARTICIPANT INFORMATION SHEET

Title of Research Project: The interplay between individual risk and resilience factors which increase or decrease the use of self-harm and suicidal behaviour within a prison environment

Brief Description of Project

Karen Slade, who works in the suicide prevention team at HMP X, is completing research with the University of Roehampton to look at:

- What might help a new prisoner feel more positive and less likely to self-harm or try to commit suicide.
- What might make a new prisoner feel less positive and more likely to self-harm or try to commit suicide.

We will be trying to help the London prisons develop ways to better support new prisoners when they first arrive. Everyone as they arrive at the prison over the next 3 months will be asked to complete these questionnaires.

What we are asking you to do:

It is up to you whether you take part in the study. If you do take part you will be given a copy of this information and consent form to keep. You can withdraw from the research at any time and a decision to withdraw will not affect your care, privileges or parole.

If you agree to take part in our study we will ask you to:

- Complete a booklet of questionnaires at some point today. This should take no longer than 30 minutes.
- One of the research team will collect the questionnaires from you when you have finished. It will be placed in an envelope and sealed so no-one else can see what you say.

What we will do:

If you agree to take part in our study we will also:

- Look at the prison's computer systems for information about you and any self-harm that occurs over the next 12 months, if you remain in prison.

On the consent form there will be a space for your name and prison number. The research team need to know your name and number so we can track you through the next days and weeks. You will however, also be given a research number and this will be written on the next page. The consent form with your name will be removed. No-one in the prison, other than the researcher will know how you answered individual questions. Information which is collected about you in the course of the study will be kept confidential. However, if you tell the researcher anything that indicates there is a direct threat of harm to myself, another person, of the security of the prison, the researcher will pass this information to the relevant prison department (e.g. Safety) and this may include the opening of an ACCT form. There will still be no access to the questionnaires and only general concerns will be described in the ACCT form.

What will happen to the results of the research study?

The results may be published as research papers in academic journals and will form part of my PsychD thesis. In addition, the results of the study may be presented at scientific conferences and other similar events. It should be stressed however, that there will be no possible way to identify you in any published or unpublished results.

Investigator: The lead researcher, Karen Slade, works at HMP X and is completing this research as part of a PsychD in Forensic psychology at Roehampton University

Contact Details:

Karen Slade, Psychology Department, HMP X: *[0208 phone number]*

Complaints

Please note: if you have a concern about any aspect of your participation or any other queries please raise this with the investigator. You can also appeal through the prison Request and Complaints procedure.
However if you would like to contact an independent party please contact the Director of Studies at Roehampton University. If you are not content with the response, you can appeal to Roehampton University (details below).

Director of Studies Contact Details:
Professor Edelmann, Professor of Forensic and Clinical Psychology
University of Roehampton

CONSENT FORM

Declaration of Consent

I am signing to confirm that:

- I have read the participant information sheet.
- I agree to take part in this research, and am aware that I am free to withdraw at any point. I understand that the information I provide will be treated in confidence by the investigator and that my identity will be protected in the publication of any findings.

I understand that:

- If I tell the researcher anything that indicates there is a direct threat of harm to myself, another person, of the security of the prison, the researcher will pass this information to the relevant prison department and this may include the opening of an ACCT form.

Your Name:

Your Prison Number:

Your Signature:

Date:

The questions on this sheet are to give the researcher some information about areas which it would be helpful for us to know about you. However, if you do not want to answer any of the questions then you do not have to do so.

Please tick the following: I am in:

□ HMP X
□ HMP Y
□ HMP Z

□ I have never been in prison before
□ I have been in this prison before
□ I have been in other prisons but not this prison

How many times have you been in prison before……..

Please tick any of these that are true for you.

□ In the past I have hurt myself
□ I have used drugs or someone else's medication in the last month
□ I think I have a mental illness now. This illness is……..
□ I used to have a mental illness but not now.
This illness was……
□ I have been told I have a personality disorder.
This was……..
□ I have a serious illness. This is……

Ethnic Group Please tick the category that you consider most relevant to you:

White	British		**Asian or Asian British**	Indian	
	Irish			Pakistani	
	Scottish			Other Asian background (please specify)	
	Welsh		**Black or Black British**	Caribbean	
	Other, including other European (please specify)			African	
Mixed	White and Black Caribbean			Other Black background (please specify)	.
	White and Black African		**Chinese or other Ethnic Group**	Chinese	
	White and Asian			Other ethnic group not covered above (please specify)	
	Other mixed background (please specify)	.	**Other**	Please specify	

Resilience Scale – RS

Please read the following statements. To the right of each you will find seven numbers, ranging from "1" (Strongly Disagree) on the left to "7" (Strongly Agree) on the right. Circle the number which best indicates your feelings about that statement. For example, if you strongly disagree with a statement, circle "1". If you are neutral, circle "4", and if you strongly agree, circle "7", etc.

	Strongly Disagree						Strongly Agree
1. When I make plans, I follow through with them.	1	2	3	4	5	6	7
2. I usually manage one way or another.	1	2	3	4	5	6	7
3. I am able to depend on myself more than anyone else.	1	2	3	4	5	6	7
4. Keeping interested in things is important to me.	1	2	3	4	5	6	7
5. I can be on my own if I have to.	1	2	3	4	5	6	7
6. I feel proud that I have accomplished things in life.	1	2	3	4	5	6	7
7. I usually take things in stride.	1	2	3	4	5	6	7
8. I am friends with myself.	1	2	3	4	5	6	7
9. I feel that I can handle many things at a time.	1	2	3	4	5	6	7
10. I am determined.	1	2	3	4	5	6	7
11. I seldom wonder what the point of it all is.	1	2	3	4	5	6	7
12. I take things one day at a time.	1	2	3	4	5	6	7
13. I can get through difficult times because I've experienced difficulty before.	1	2	3	4	5	6	7
14. I have self-discipline.	1	2	3	4	5	6	7
15. I keep interested in things.	1	2	3	4	5	6	7
16. I can usually find something to laugh about.	1	2	3	4	5	6	7
17. My belief in myself gets me through hard times.	1	2	3	4	5	6	7
18. In an emergency, I'm someone people can generally rely on.	1	2	3	4	5	6	7
19. I can usually look at a situation in a number of ways.	1	2	3	4	5	6	7
20. Sometimes I make myself do things whether I want to or not.	1	2	3	4	5	6	7
21. My life has meaning.	1	2	3	4	5	6	7
22. I do not dwell on things that I can't do anything about.	1	2	3	4	5	6	7
23. When I'm in a difficult situation, I can usually find my way out of it.	1	2	3	4	5	6	7

24. I have enough energy to do what I have to do.	1	2	3	4	5	6	7
25. It's okay if there are people who don't like me.	1	2	3	4	5	6	7
26. I am resilient.	1	2	3	4	5	6	7

The Defeat Scale

Below is a series of statements, which describe how people can feel about themselves. Read each item carefully and circle the number to the right of the statement that best describes how you have felt in the last 7 days. Use the scale below. Please do not omit any item.

	Never	Rarely	Sometimes	Mostly (A lot)	Always
1. I feel that I have not made it in life.	0	1	2	3	4
2. I feel that I am a successful person.	0	1	2	3	4
3. I feel defeated by life	0	1	2	3	4
4. I feel that I am basically a winner.	0	1	2	3	4
5. I feel that I have lost my standing in the world.	0	1	2	3	4
6. I feel that life has treated me like a punch bag.	0	1	2	3	4
7. I feel powerless.	0	1	2	3	4
8. I feel that my confidence has been knocked out of me.	0	1	2	3	4
9. I feel able to deal with whatever life throws at me.	0	1	2	3	4
10. I feel that I have sunk to the bottom of the ladder.	0	1	2	3	4
11. I feel completely knocked out of action.	0	1	2	3	4
12. I feel that I am one of life's losers.	0	1	2	3	4
13. I feel that I have given up.	0	1	2	3	4
14. I feel down and out.	0	1	2	3	4
15. I feel that I have lost important battles in my life	0	1	2	3	4
16. I feel that there is no fight left in me.	0	1	2	3	4

The Entrapment Scale

For each of the following attitude statements indicate the extent to which you think it represents your own view of yourself. Circle the number that best describes the extent to which each statement is Like You.

	Not at all like me	A little like me	Moderately like me	Quite a bit like me	Extremely like me
1. I am in a situation I feel trapped in	0	1	2	3	4
2. I have a strong desire to escape from things in my life	0	1	2	3	4
3. I am in a relationship I can't get out of	0	1	2	3	4
4. I often have the feeling that I would just like to run away	0	1	2	3	4
5. I feel powerless to change things	0	1	2	3	4
6. I feel trapped by my obligations	0	1	2	3	4
7. I can see no way out of my current situation	0	1	2	3	4
8. I would like to get away from other more powerful people in my life	0	1	2	3	4
9. I have a strong desire to get away and stay away from where I am now	0	1	2	3	4
10. I feel trapped by other people	0	1	2	3	4
11. I want to get away from myself	0	1	2	3	4
12. I feel powerless to change myself	0	1	2	3	4
13. I would like to escape from my thoughts and feelings	0	1	2	3	4
14. I feel trapped inside myself	0	1	2	3	4
15. I would like to get away from who I am and start again	0	1	2	3	4
16. I feel I'm in a deep hole I can't get out of	0	1	2	3	4

Perceived Stress Scale. The questions in this scale ask you about your feelings and thoughts during the LAST MONTH. In each case, you will be asked to indicate your response by choosing the closest answer. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, don't try to count up the number of times you felt a particular way but indicate the answer that seems a reasonable estimate.

	Never	Almost Never	Sometimes	Fairly Often	Very Often
1. In the last month, how often have you been upset because of something that happened unexpectedly?	1	2	3	4	5
2. In the last month, how often have you felt that you were unable to control the important things in your life?	1	2	3	4	5
3. In the last month, how often have you felt nervous and stressed?	1	2	3	4	5
4. In the last month, how often have you dealt successfully with day to day problems and annoyances?	1	2	3	4	5
5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?	1	2	3	4	5
6. In the last month, how often have you felt confident about your ability to handle your personal problems?	1	2	3	4	5
7. In the last month, how often have you felt that things were going your way?	1	2	3	4	5
8. In the last month, how often have you found that you could not cope with all the things that you had to do?	1	2	3	4	5
9. In the last month, how often have you been able to control irritations in your life?	1	2	3	4	5
10. In the last month, how often have you felt that you were on top of things?	1	2	3	4	5
11. In the last month, how often have you been angry because of things that happened that were outside of your control?	1	2	3	4	5
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?	1	2	3	4	5
13. In the last month, how often have you been able to control the way you spend your time?	1	2	3	4	5
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	1	2	3	4	5

Locus of Control of Behaviour Scale

Below are a number of statements about how various topics affect your personal beliefs. There are no right or wrong answers. For every item there are a large number of people who agree or disagree. Could you please put in the appropriate space the choice you believe to be true.

		Strongly disagree	Generally disagree	Somewhat disagree	Somewhat agree	Generally agree	Strongly agree
1.	I can anticipate difficulties and take action to avoid them	0	1	2	3	4	5
2.	A great deal of what happens to me is probably just a matter of chance	0	1	2	3	4	5
3.	Everyone knows that luck or chance determines one's future	0	1	2	3	4	5
4.	I can control my problems only if I have outside support	0	1	2	3	4	5
5.	When I make plans, I am almost certain that I can make them work	0	1	2	3	4	5
6.	My problems will dominate me all my life	0	1	2	3	4	5
7.	My mistakes and problems are my responsibility to deal with	0	1	2	3	4	5
8.	Becoming a success is a matter of hard work, luck has little or nothing to do with it	0	1	2	3	4	5
9.	My life is controlled by outside actions and events	0	1	2	3	4	5
10.	People are victims of circumstance beyond their control	0	1	2	3	4	5
11.	To continually manage my problems I need professional help	0	1	2	3	4	5
12.	When I am under stress, the tightness in my muscles is due to things outside my control	0	1	2	3	4	5
13.	I believe a person can really be a master of his fate	0	1	2	3	4	5
14.	It is impossible to control my irregular and fast breathing when I am having difficulties	0	1	2	3	4	5
15.	I understand why my problems vary so much from one occasion to the next	0	1	2	3	4	5
16.	I am confident of being able to deal successfully with future problems	0	1	2	3	4	5
17.	In my case maintaining control over my problems is due mostly to luck.	0	1	2	3	4	5

Social Support Appraisals Below are a list of statements about your relationships with family and friends. Please indicate how much you agree or disagree with each statement being true.	Strongly Agree	Agree	Disagree	Strongly disagree
My friends respect me	1	2	3	4
My family cares for me very much	1	2	3	4
I am not important to others	1	2	3	4
My family holds me in high esteem	1	2	3	4
I am well liked	1	2	3	4
I can rely on my friends	1	2	3	4
I am really admired by my family	1	2	3	4
I am respected by other people	1	2	3	4
I am loved dearly by my family	1	2	3	4
My friends don't care about my welfare	1	2	3	4
Members of my family rely on me	1	2	3	4
I am held in high esteem	1	2	3	4
I can't rely on my family for support	1	2	3	4
People admire me	1	2	3	4
I feel a strong bond with my friends	1	2	3	4
My friends look out for me	1	2	3	4
I feel valued by other people	1	2	3	4
My family really respects me	1	2	3	4
My friends and I are really important to each other	1	2	3	4
I feel like I belong	1	2	3	4
If I died tomorrow, very few people would miss me	1	2	3	4
I don't feel close to members of my family	1	2	3	4
My friends and I have done a lot for one another	1	2	3	4

Depression, Hopelessness and Suicide Screening Scale

Please answer all of the questions. Circle either T (True) or F (False).

		True	False
1	I feel sad most of the time.	T	F
2	My future seems bleak.	T	F
3	Sometimes I feel bad for no reason.	T	F
4	I have been diagnosed as being depressed by a psychiatrist or psychologist in the past.	T	F
5	I am mostly happy.	T	F
6	I can't see how my circumstances will get better.	T	F
7	I feel like a failure and I am disappointed with myself.	T	F·
8	I have close friends or family members who have killed themselves.	T	F
9	I have a normal amount of energy.	T	F
10.	Life is too hard for me right now.	T	F
11.	I seem to get distracted easily.	T	F
12.	Suicide is not an option for me.	T	F
13.	I feel tired a lot of the time.	T	F
14.	My future will be mostly happy.	T	F
15.	I have trouble sleeping at night.	T	F
16.	I have had serious thoughts of suicide in the past.	T	F
17.	Usually I sleep soundly.	T	F
18.	No matter what I do, things don't get better.	T	F
19.	I feel down most of the time.	T	F
20.	I have intentionally hurt myself.	T	F
21.	I am often bored and unhappy.	T	F
22.	I am certain I can make something of myself.	.T	F
23.	Sad thoughts keep me awake at night.	T	F
24.	If circumstances get too bad, suicide is always an option.	T	F.
25.	I have many interests I follow.	T	F
26.	Most times things don't seem to go my way.	T	F
27.	Lately I prefer to keep to myself	T	F
28.	In the past my suicidal thoughts have led to a suicide attempt.	T	F

29. I have lost my appetite.	T	F
30. It is hard for me to see myself being happy.	T	F
31. My life is generally satisfying and interesting.	T	F
32. I have attempted suicide more than once in the past.	T	F
33. My problems don't seem to end.	T	F
34. I have attempted suicide in the past two years.	T	F
35. I feel my situation is hopeless.	T	F
36. I have recently had thoughts of hurting myself.	T	F
37. I don't think I will amount to anything.	T	F
38. Life is not worth living.	T	F
39. I have a plan to hurt myself.	T	F

Coping Responses Inventory-Adult

These questions are about how you manage important problems that come up in your life. Please think about the most important problem or stressful situation you have experienced in the last month (for example, troubles with a relative or friend, illness or death of a relative or friend, financial or work problems). Briefly describe the problem in the space below. Then answer each of the questions about the problem or situation by circling the appropriate response.

Describe the problem or situation

.....
.....
.....
.....

	Definitely No	Mainly No	Mainly Yes	Definitely Yes
1. Have you ever faced a problem like this before?	1	2	3	4
2. Did you know this problem was going to occur?	1	2	3	4
3. Did you have enough time to get ready to handle this problem?	1	2	3	4
4. When this problem occurred, did you think of it as a threat?	1	2	3	4
5. When this problem occurred, did you think of it as a challenge?	1	2	3	4
6. Was this problem caused by something you did?	1	2	3	4
7. Was this problem caused by something someone else did?	1	2	3	4
8. Did anything good come out of dealing with this problem?	1	2	3	4

9.	Has this problem or situation been resolved?	1	2	3	4
10.	If the problem has been worked out, did it turn out all right for you?	1	2	3	4

Read each item carefully and indicate how often you engaged in that behaviour in connection with the problem you described. Circle the most appropriate response below. There are 48 items in this part. If you do not wish to answer an item, please circle the number the number of that item to indicate that you have decided to skip it. If an item does not apply to you please write NA (Not applicable) in that box. There are 4 options for your answer. If you response is: 'No, not at all' circle 1; 'Yes, once or twice' circle 2; 'Yes, sometimes' circle 3; or ' Yes, fairly often' circle 4.

		No. Not at all	Yes, once or twice	Yes, sometimes	Yes, Fairly often
1.	Did you think of different ways to deal with the problem?	1	2	3	4
2.	Did you tell yourself things to make yourself feel better?	1	2	3	4
3.	Did you talk with your spouse or other relative about the problem?	1	2	3	4
4.	Did you make a plan of action and follow it?	1	2	3	4
5.	Did you try to forget the whole thing?	1	2	3	4
6.	Did you feel that time would make a difference – that the only thing to do was wait?	1	2	3	4
7.	Did you try to help others deal with a similar problem?	1	2	3	4
8.	Did you take it out on other people when you felt angry or depressed?	1	2	3	4
9.	Did you try to step back from the situation and be more objective?	1	2	3	4
10.	Did you remind yourself how much worse things could be?	1	2	3	4
11.	Did you talk with a friend about the problem?	1	2	3	4
12.	Did you know what had to be done and try hard to make things work?	1	2	3	4
13.	Did you try not to think about the problem?	1	2	3	4
14.	Did you realise that you had no control over the problem?	1	2	3	4
15.	Did you get involved in new activities?	1	2	3	4
16.	Did you take a chance and do something risky?	1	2	3	4
17.	Did you go over in your mind what you would say or do?	1	2	3	4
18.	Did you try to see the good side of the situation?	1	2	3	4
19.	Did you talk with a professional person? (e.g. doctor, lawyer, clergy)	1	2	3	4
20.	Did you decide what you wanted and try hard to get it?	1	2	3	4
21.	Did you daydream or imagine a better time or place than the one you were in?	1	2	3	4
22.	Did you think that the outcome would be decided by fate?	1	2	3	4
23.	Did you try to make new friends?	1	2	3	4
24.	Did you keep away from people in general?	1	2	3	4
25.	Did you try to anticipate how things would turn out?	1	2	3	4

26. Did you think about how you were much better off than other people with similar problems?	1	2	3	4
27. Did you seek help from persons or groups with the same type of problem?	1	2	3	4
28. Did you try at least two different way to solve the problem?	1	2	3	4
29. Did you try to put off thinking about the situation, even though you knew you would have to at some point?	1	2	3	4
30. Did you accept it; nothing could be done?	1	2	3	4
31. Did you read more often as a source of enjoyment?	1	2	3	4
32. Did you yell or shout to let off steam?	1	2	3	4
33. Did you try to find some personal meaning in the situation?	1	2	3	4
34. Did you try to tell yourself that things would get better?	1	2	3	4
35. Did you try to find out more about the situation?	1	2	3	4
36. Did you try to learn to do more things on your own?	1	2	3	4
37. Did you wish the problem would go away or somehow be over with?	1	2	3	4
38. Did you expect the worst possible outcome?	1	2	3	4
39. Did you spend more time in recreational activities?	1	2	3	4
40. Did you cry to let your feelings out?	1	2	3	4
41. Did you try to anticipate the new demands that would be placed on you?	1	2	3	4
42. Did you think about how this event could change your life in a positive way?	1	2	3	4
43. Did you pray for guidance and/or strength?	1	2	3	4
44. Did you take things a day at a time, one step at a time?	1	2	3	4
45. Did you try to deny how serious the problem really was?	1	2	3	4
46. Did you lose hope that things would ever be the same?	1	2	3	4
47. Did you turn to work or other activities to help you manage things?	1	2	3	4
48. Did you do something that you didn't thing would work but at least you were doing something?	1	2	3	4

Thank you for completing the questions.

APPPENDIX G

DEBRIEF FORM

PARTICIPANT DEBRIEF FORM

Title of Research Project: The interplay between individual risk and resilience factors which increase or decrease the use of self-harm and suicidal behaviour within a prison environment

Thank you for completing the questionnaires for the study.

If you have been affected by the completion of these questionnaires or you are just feeling low and want some help, here are some of the people you can contact:

- **Listeners –** these are prisoners trained to listen to your problems. Just ask a wing officer to call one out for you.
- **Samaritans –** there is a dedicated phone line which is free if you want to talk confidentially to someone. Ask your wing officer for the phone.
- **Wing Officer** can help with practical concerns or contact other departments
- **Mental Health In-Reach** service through Healthcare on application form
- **Counselling Services**, apply through healthcare on application form

Brief Description of Project

Karen Slade, who works in the suicide prevention team at HMP X, is completing research with the University of Roehampton to look at:

- What might help a new prisoner feel more positive and less likely to self-harm or try to commit suicide.
- What might make a new prisoner feel less positive and more likely to self-harm or try to commit suicide.

We are trying to help the London prisons develop ways to better support new prisoners when they first arrive. Everyone as they arrive at the prison over the next 3 months will be asked to complete these questionnaires.

What we are asked you to do:

- Complete a booklet of questionnaires. These questionnaires measure a range of factors and include:
  Level of resilience, feelings of defeat and entrapment, locus of control (whether you feel in control of what happens to you), coping strategies, perceived social support and perceived stress level.

- One of the research team collected the questionnaires from you when you finished. It was placed in an envelope and sealed so no-one else can see what you said.

What we will do:

- Look at the prison's computer systems for information about you and any self-harm that occurs over the next 12 months, if you remain in prison.
- Look at how the answers you gave predict if you will or will not self-harm or attempt suicide over the next year.

No-one in the prison, other than the researcher will know how you answered individual questions as a research number will be the given to your answers and your name removed. Information which is collected about you in the course of the study will be kept confidential. However, if you tell the researcher anything that indicates there is a direct threat of harm to myself, another person, of the security of the prison, the researcher will pass this information to the relevant prison department (e.g. Safety) and this may include the opening of an ACCT form. There will still be no access to the questionnaires and only general concerns will be described in the ACCT form.

What will happen to the results of the research study?

The results may be published as research papers in academic journals and will form part of the University thesis and may be presented at scientific conferences and other similar events. In addition, the results will be made available to prison service. It should be stressed however that there will be no possible way to identify you in any published or unpublished results.

All the questionnaires and information gathered will be kept securely with sole access by the researcher, with all questionnaires locked away and all data placed on computer solely accessible by the researcher and only identifiable by research number. No identifiable information (e.g. your name and number) will be accessible.

You are free to withdraw at any time without needing to explain why and none of your information will then be used in the research.

Investigator: The lead researcher, Karen Slade, works at HMP X. If you have any questions or wish to withdraw please contact her at:

Contact Details:

Karen Slade
Psychology Department
HMP X
[phone number]

Complaints

Please note: if you have a concern about any aspect of your participation or any other queries please raise this with the investigator. You can also appeal through the prison Request and Complaints procedure.

However, if you would like to contact an independent party please contact the Director of Studies at Roehampton University (details below).

Director of Studies Contact Details:
Professor R Edelmann
Professor of Forensic and Clinical Psychology

Appendix H: Ethics Approval from Roehampton University

Roehampton University London

SCHOOL OF HUMAN & LIFE SCIENCES
Roehampton University
Whitelands College
Holybourne Avenue
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Dr. Lance Slade
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MEMORANDUM

TO: Karen Slade
CC: Prof. Robert Edelmann
CC: Dr. Marcia Worrell
CC: Dr. Mandy Holmes

FROM: Dr. Lance Slade

DATE: 16th November 2009

SUBJECT: Ethics Application (Ref: PSY 09/ 035)

I am pleased to advise you that the School Ethics Committee has made the following decision with regard to the Ethics Application for your project entitled:

"The interplay between individual risk and resiliance factors which increase or decrease the use of self-harm & suicidal behaviour within a prison environment."

1: Approved	☑
2: Approved with Minor Conditions/ Revisions	☐
3: Approved with Major Conditions/ Revisions	☐
4: Rejected	☐

Details of this decision will be passed on to the University Ethics Board for ratification, who will contact you directly by email regarding this.
IMPORTANT: Please note that the decision of the School Ethics Committee is given pending ratification by the University Ethics Board, and you may not proceed with your research until you receive notification that your application has been approved by them.

Conditions/ Revisions:
The Chairs of the School Ethics Committee (Dr. Lance Slade) or of your Subject Area Ethics Working Group (Dr. Mandy Holmes) will be happy to provide any further feedback to you.

Please could you confirm with Lemady Rochard, Secretary to the University Ethics Board, and the chair of your Subject Area Ethics Working Group once you have successfully met any conditions imposed.

With very best wishes for a successful project,

Dr. Lance Slade
(Chair HALS School Ethics Committee)

APPENDIX I: ETHICAL APPROVAL LETTER FROM HM PRISON SERVICE LONDON REGION

Psychology Department
HMP Wormwood Scrubs, Du Cane Road
London W12 0AE
Tel 020 85883624
Email omolara.jonah@hmps.gsi.gov.uk

Karen Slade

Head of Psychology

HMP X,

[address]

17 June 2009

Dear Ms Slade

Re: To identify the interplay between individual risk and resilience factors which increase or decrease the use of self-harm & suicidal behaviour within a prison environment'

Establishments: HMP X, HMP Y, HMP Z and HMP P.

Thank-you for your response to my feedback, following your application to undertake research within the London Area of HM Prison Service and for the amendments to the Participant Information and Consent forms.

In line with the information that you have provided, I am pleased to be able to support your application to conduct research in the above establishments. This is subject, strictly, to the agreement of the Governors and Research Contacts at the relevant establishments, and the resources available within their establishments and the following requirements:

- That the London Area of the Prison Service receives a copy of any completed reports submitted as a result of the research; in the absence of the London Area Psychologist these should be submitted to me at the above address.
- That I am contacted regarding any considerations to extend your study to other establishments within the London Area of the Prison Service.

May I suggest that in the first instance, you contact the Research Contacts in the relevant establishments, copying to them all the relevant paperwork, including all correspondence between us, so that following agreement from their Governors, they can advise you on how best to proceed with your research. In addition you may find it useful to approach the **Safer Custody manager** at each of the participating prisons. This will enable you to gain an understanding of the local procedures, environmental and social issues within each establishment and their potential impact on your study. This could also provide the basis for collaborative working arrangements between your team and the prison.

May I take this opportunity to wish you well with your research.

Yours sincerely

Lara Jonah

Chartered Forensic Psychologist

Acting London Area Research Co-ordinator

HM Prison Service

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